

# A catalogue of the scaleworm genus *Lepidonotus* (Polynoidae, Polychaeta) from South America, with two new records for Brazilian waters

José Eriberto De Assis<sup>1</sup>, Rafael Justino de Brito<sup>2</sup>,  
Martin Lindsey Christoffersen<sup>2</sup>, José Roberto Botelho de Souza<sup>1</sup>

**1** Departamento de Zoologia, Centro de Ciências Biológicas - UFPE. Av. Prof. Moraes Rego, 1235, Recife, Pernambuco, Brasil. CEP: 50670-901 **2** Departamento de Sistemática e Ecologia, Centro de Ciências Exatas e da Natureza - UFPB, Cidade Universitária, CEP 58059-900, João Pessoa, Paraíba, Brasil

Corresponding author: José Eriberto De Assis ([eri.assis@gmail.com](mailto:eri.assis@gmail.com))

---

Academic editor: Chris Glasby | Received 19 August 2015 | Accepted 17 September 2015 | Published 9 November 2015

---

<http://zoobank.org/3366BE96-228D-4245-8BB7-5D14A66D9DDC>

---

**Citation:** De Assis JE, Brito RJ, Christoffersen ML, Souza JRB (2015) A catalogue of the scaleworm genus *Lepidonotus* (Polynoidae, Polychaeta) from South America, with two new records for Brazilian waters. ZooKeys 533: 63–98. doi: 10.3897/zookeys.533.6184

---

## Abstract

The genus *Lepidonotus* is the largest in number of species within the Polynoidae, with more than 70 described species and subspecies. A catalogue of 18 nominal species and subspecies of *Lepidonotus* from South America is provided, with valid names, synonyms and original citations. Redescriptions and illustrations of two species based on new specimens collected along the littoral of the State of Paraíba, northeastern Brazil are included. *Lepidonotus carinulatus* and *Lepidonotus natalensis* are reported for the first time for Brazilian waters. A comparative table of characters for all reported species and subspecies of *Lepidonotus* from South America is provided.

## Keywords

Benthos, Annelida, catalogue, new record, distribution

## Introduction

The scaleworm *Lepidonotus* belongs to the family Polynoidae, and contains more than 70 described species (Read and Fauchald 2015). They have been found from the intertidal to the bathyal zones, in diverse marine environments (Day 1967, Fauchald 1977, Salazar-Silva 2006, Wehe 2006).

Leach (1816) established the genus *Lepidonotus* for the species *Aphrodita clava* Montagu (1808), which had been described earlier. This author did not provide identifying characters of the genus, which led to subsequent confusion in the literature, causing many synonyms. Later, Seidler (1923) made a very extensive review of the Lepidonotinae, presenting descriptions and keys to more than 50 species of *Lepidonotus*, but there are almost no illustrations to supplement the descriptions, nor is it clear from the text which specimens or types were examined (Wehe 2006). However, Wehe (2006) clarified that this paper is invaluable in providing base-line data and access to the literature on lepidonotid genera.

*Lepidonotus* has a short body with 26 segments, is dorsoventrally flattened, and subrectangular in the cross-section. The prostomium is bilobed, extending anteriorly into the ceratophores of the terminally-attached lateral antennae. The antennae and cirri are smooth. A facial tubercle is present; the buccal segment is with or without nuchal fold. Twelve pairs of elytra are present on segments 2, 4, 5, 7, 9, 11, 13, 15, 17, 19, 21 and 23; elytra are with or without tubercles and papillae. The notopodia small or vestigial, unidentate notochaetae are short. The neuropodia are large, with or without an acicular lobe; the neurochaetae are stout, long, with subdistal spines and unidentate or occasionally bidentate tips (Fauchald 1977, Amaral and Nonato 1982, Ruff 1995, Wehe 2006).

In this paper, a catalogue of the genus *Lepidonotus* from South America is provided, and *L. carinulatus* and *L. natalensis* are redescribed, collected in the intertidal region of the State of Paraíba, northeastern Brazil. These two species are reported for the first time for Brazilian waters.

## Material and methods

The species accounts in the catalogue are given alphabetically. Each account contains author, publication year, number of pages, figures, types, and deposition numbers, together with the abbreviation of the museum or institution in which the type material is deposited, type locality with coordinates and geographical distribution, when available. In some cases, remarks on taxonomic status of some species are included. Synonyms are listed chronologically. A comparative table for all reported species and subspecies from South American is provided (Table 1).

Specimens were collected by handpicking during low tides from the intertidal region (0.0–0.2 m) and by snorkeling to a depth of up to 5 meters along the coast of the state of Paraíba. Specimens were fixed in formaldehyde (10% in seawater), and

**Table 1.** Comparative table for all species and subspecies of the genus *Lepidonotus* from South America.

Species	Characters							
	Prostomium	Palps	Nuchal nodules	Posterior part of the elytra	Microtubercule	Macro-tubercule	Notochaetae	Neurochaetae
<i>L. arenosus</i>	Rounded	Smooth	Present	Numerous posterior papillae	Small papillae egg-shaped	Bigger central papillae egg-shaped	Thin capillaries in all chaetigers	Stout, curved, with spinous row, tip bidentate
<i>L. brasiliensis</i>	Rounded	Smooth	Absent	Numerous thin papillae	Small papillae lunar crate-shaped	Big papillae mushroom-shaped	Spinous ciliated capillaries	Stout, curved, with spinous rows, tip unidentate
<i>L. brasiliensis laevis</i>	Rounded	Smooth	Absent	Numerous papillae in posterior elytra	Small papillae lunar crate-shaped	Big papillae mushroom-shaped	Thin capillaries, with 3 ciliated filaments	Stout, straight, smooth blade, unidentate
<i>L. caeruleus</i>	Longer than wide	Papillate	Absent	Numerous short papillae on posterior portion	Conical	Absent	Longer capillaries shorter, curved and dentate; shorter capillaries long and barbed	Long, strongly curved, with spinous row, tip bidentate
<i>L. carinulatus</i>	Rounded to hexagonal, buccal segment with two nuchal nodules	With 8 rows of longitudinal papillae	Present	Papillae along external edge	Small warty tubercles	Carinate tubercles scattered	Spinous, superior row slender, serrate on convex side	Stout, falcate, subdistally thickened, few rows of spines, tip bidentate
<i>L. crosslandi</i>	Rounded, with posterior nuchal fold	Smooth	Absent	Numerous short posterior papillae	Small and thin tubercles	Absent	Fairly numerous capillaries	Stout, slightly curved tip, with a row of spines, bidentate in two chaetigers
<i>L. crosslandi peruana</i>	Rounded	Smooth	Present	Numerous short posterior papillae	Small and thin tubercles	Absent	Fairly numerous capillaries	Stout, tip slightly curved, with rows of strong spines, bidentate in all chaetigers
<i>L. furcillatus</i>	Rounded	With numerous papillae	Absent	Digitiform papillae with central dark spot	Small and conical	Small, nodular	Curved, short, smooth	Stout, weakly ornamented, bidentate

Species	Characters							
	Prostomium	Palps	Nuchal nodules	Posterior part of the elytra	Microtubercule	Macrotubercule	Notochaetae	Neurochaetae
<i>L. hupferi</i>	Rounded to hexagonal	Smooth	Absent	Fringe covering posterior part of elytra	Rounded, surface rough	Warty and pointed	Capillaries spinous in all chaetigers	Stout, spinous rows with fine teeth, bidentate
<i>L. margaritaceus</i>	Convex, posterior rounded	Smooth	Absent	Slender papillae on posterior border	Small granules	Absent	Short, numerous rows of small spines	Stout, numerous rows of distal spines, unidentate
<i>L. natalensis</i>	Slightly hexagonal	With 8 rows of Longitudinal papillae		Long digitiform external papillae and group of infero-central papillae	Crown-like tip or without tip	Crown-like tip in central region	Spinous, superior row slender, tips fine, pointed	Stout, falcate, subdistally slightly thickened, few rows of spines, tip unidentate
<i>L. nesophilus</i>	Convex, posterior rounded	smooth	Absent	Absent	Hemispherical, spinous	Long spines	Spinous capillaries in all chaetigers	Stout, with spinous rows, bidentate
<i>L. panamensis</i>	Largely hidden, convex lobe projecting over posterior half	A few papillae		Numerous posterior papillae and tulf of long central papillae	Numerous small spines on centre	Excavate disk, cap covered by many spines	Chaetae shorter, falcate	Long, stout, with curved tip, unidentate
<i>L. saryngni</i>	Rounded	Smooth	Absent	Slender short posterior papillae	Numerous small warty-shaped spines	Warty-shaped	Spinous capillaries in all chaetigers	Long, stout, tip curved, unidentate
<i>L. sublevis</i>	Slightly longer than wide	Papillate	Absent	Additional posterior papillae	Conical, without areola	Absent	Spinous capillaries in all chaetigers	Stout, few spinous rows, tip slightly hooked
<i>L. teinuetosus</i>	Oblong, no cephalic peaks	Smooth	Absent	Slender posterior papillae	Blunt or somewhat warty tips	Very small, conical or globular	Slender, numerous rows of small spines and capillary tips tapering	Stouter, falcate, numerous distal spine rows, d mostly unidentate, few spines minutely bidentate
<i>L. tomentosus</i>	Rounded	Smooth	Absent	Numerous large posterior papillae	Small warty tips	Numerous warts on central elytra	Spinous capillaries in all chaetigers;	Stout, with spinous row, bidentate
<i>L. variabilis</i>	Rounded	Smooth	Absent	Numerous large posterior papillae	Small, cylindrical	Absent	Spinous capillaries in all chaetigers	Stout, with spinous rows, secondary teeth small, bidentate

later rinsed with fresh water and transferred to 70% ethanol. General structures were observed with Stereomicroscope Olympus Nikon SMZ800. Chaetae and elytrae were observed with an Olympus BX41 compound microscope. All illustrations were drawn using a camera lucida, and photographs were edited in Photoshop, PhotoScape and CorelDraw X7. Specimens are deposited in the 'Coleção de Invertebrados Paulo Young', Departamento de Sistemática e Ecologia da Universidade Federal da Paraíba, Brazil.

The nomenclature of appendages and other characteristics of polynoids mentioned in this paper follow Tebble and Chambers (1982), Hanley and Burke (1991), Ruff (1995), Imajima (1997), and Wehe (2006).

The following abbreviations are used in the text:

<b>AMNH</b>	American Museum of Natural History, New York
<b>BMNH</b>	The Natural History Museum, London, Great Britain (formerly British Museum of Natural History)
<b>LIPY</b>	Laboratório de Invertebrados Paulo Young, Paraíba, Brazil
<b>MNHN Poly Type</b>	Polychaeta type collection, Museum National d'Histoire Naturelle, Paris
<b>NCB</b>	Naturalis, The Netherlands Centre for Biodiversity, Leiden.
<b>PMNH</b>	Peabody Museum of Natural History, Yale University
<b>POLY-UFPB</b>	Coleção de Polychaeta do Laboratório de Invertebrados Paulo Young.
<b>SSM, Naturhistoriska</b>	Rijsmuseet, Stockholm.
<b>USNM</b>	National Museum of Natural History, Smithsonian Institution, Washington D.C.
<b>ZUEC-POL</b>	Polychaete Collection, Zoological Museum of the State University of Campinas, São Paulo.
<b>ZMB</b>	Naturhistorisches Forschungsinstitut, Museum für Naturkunde, Zentralinstitut der Humboldt-Universität zu Berlin, Germany.
<b>ZMH</b>	Zoologisches Institut und Museum der Universität Hamburg, Germany.

## Results

### Family Polynoidae Malmgren, 1867

#### Genus *Lepidonotus* Leach, 1816

**Type species.** *Aphrodita clava* Montagu, 1808

Leach 1816, Hanley and Burke 1991, Ruff 1995, Chambers and Muir 1997, Barnich and Fiege 2003.

**Diagnosis.** Body short, arched, with 26 segments. Bilobed prostomium extending anteriorly into ceratophores of terminally-attached lateral antennae. Antennae and cirri smooth. Facial tubercle present; buccal segment with or without nuchal fold. Twelve

pairs of elytra on segments 2, 4, 5, 7.... 21 and 23. Notopodia small or vestigial; unidentate notochaetae short, slender, spinose, or notochaetae capillaries sometimes present. Neuropodia large, with or without acicular lobe; neurochaetae stout, long, with subdistal spines and unidentate or occasionally bidentate tips.

**Remarks.** The genus *Lepidonotus* contains more than 70 species distributed worldwide (Ruff 1995). However, only 18 species and subspecies have been reported for South America, including the two new records described here.

### 1. *Lepidonotus arenosus* Ehlers, 1901b

*Lepidonotus arenosus* Ehlers, 1901b: 253–254 (Calbuco, Chile), 1901a: 49, pl. 2: figs 9–12 (Chile).—Wesenberg-Lund 1962: 15.—Hartwich 1993: 80.—Pleijel 2007: 179 (New Caledonia).

**Holotype.** NCB Verm. 3643.

**Type locality.** Calbuco, Chile.

**Distribution.** Chile and New Caledonia.

### 2. *Lepidonotus brasiliensis* (Quatrefages, 1866)

*Polynoe brasiliensis* Quatrefages, 1866: 246–247 (Bahia, Brazil).—Solís-Weiss et al. 2004: 358. *Lepidonotus brasiliensis*—Seidler 1924: 37.—Amaral and Nonato 1982: 25.—Salazar-Vallejo 1996: 15.—Amaral et al. 2013.

**Syntype of *Polynoe brasiliensis*.** MNHN Poly Type 78.

**Type locality.** Bahia, Brazil.

**Distribution.** Known only from the type-locality in Bahia.

### 3. *Lepidonotus brasiliensis laevis* Rullier & Amoureux, 1979

*Lepidonotus brasiliensis laevis* Rullier & Amoureux, 1979: 150, fig. d. (Brazil).—Solís-Weiss et al. 2004: 358.

**Syntype.** MNHN Poly Type: 1304.

**Type locality.** Bahia, Brazil.

**Distribution.** This species occurs along the Brazilian littoral.

**Remarks.** Solís-Weiss et al. (2006) considered only the species, however, in Read and Fauchald (2015), the status as subspecies is considered valid.

#### 4. *Lepidonotus caeruleus* Kinberg, 1856

*Lepidonotus caeruleus* Kinberg, 1856: 384 (off Rio de Janeiro-Brazil), 1858: 13–14, pl. 4: fig. 16, pl. 10, fig. 51.—Baird 1865: 183.—Grube 1876: 61.—Seidler 1924: 69.—Hartman 1939: 108–109.—Nonato and Luna 1970a: 63 (Alagoas, 19–35 m); 1970b: 66–67, pl. 1: figs 8–14 (Alagoas, 19–35 m).—Rullier and Amoureux 1979: 152 (Alagoas and Bahia).—Morgado and Amaral 1981: 93 (São Paulo, in bryozoan colonies).—Amaral and Nonato 1982: 25.—Salazar-Vallejo 1996: 15.—Duarte and Nalesso 1996: 142 (São Paulo, in colonies of *Zygomyscale parishii*).—Morgado and Tanaka 2001: 178 (São Paulo; in colonies of *Schizoporella errata*).—Berlandi et al. 2012: 282 (off Espírito Santo State, rhodolith beds).—De Assis et al. 2012: 17 (Paraíba).—Cunha et al. 2013: 146 (off Bahia).

*Polynoe caerulea*.—Quatrefages 1866: 224.

*Lepidonotus caeloris*.—Moore 1903: 412–414, pl. 23: fig. 12 (Japan, 115–280 m), 1906: 546–547, pl. 36: figs 36–37 (Alaska); 1908: 331 (Alaska and Pacific Canada), 1910: 333–334 (California).—Essenberg 1918: 184 (Alaska to California, 53–932 m).—Hartman and Reish 1950: 5 (Oregon).—Díaz-Castaneda and Rodríguez-Villanueva 1998: 12 (Pacific Mexico).

*Polynoë caelora*.—Izuka 1912: 23–25, fig. (Japan).

*Lepidonotus caelorus*.—Treadwell 1914: 182 (California).—Chamberlin 1918: 174 (California).—Berkeley 1923: 213 (Pacific Canada).—Hartman 1939: 44, 1944: 244 (California).—Rioja 1941: 680 (Pacific Mexico), 1947: 199 (Pacific Mexico).—Berkeley and Berkeley 1942 (Alaska).—Pettibone 1953: 15–16, pl. 1: figs 1–8; pl. 2: figs 9–19 (Washington and Oregon 7.3–256 m, with *Volsella modiolus*, *Balanus nubilus*, on tube of *Neosabella* [as *Sabellaria*] *cementarium*, in calcareous tubes of *Dodecaceria* “*pacifica*”).—Reish 1968: 100 (California).

*Lepidonotus coelorus*.—Treadwell 1937: 141 (California).—Berkeley and Berkeley 1942: 187 (Pacific Canada), 1948: 9–10, figs 6–7 (Pacific Canada).—Pequegnat 1964: 278 (California).

*Lepidonotus caerulus*.—Berkeley and Berkeley 1941: 20 (California).

**Holotype.** ZUEC-POL 2919.

**Type locality.** off Rio de Janeiro-Brazil.

**Distribution.** Western Pacific from Japan. Eastern Pacific from Alaska to California. Southwestern Atlantic from Paraíba to São Paulo. 7.3–932 m (Figure 1).

**Biology.** The species occurs in colonies of the sponge *Zygomyscale parishii* (Bowerbank, 1875), in colonies of the bryozoan *Schizoporella errata* (Waters, 1879), on tubes of sabellariid *Neosabellaria cementarium* (Moore, 1906), in tubes of cirratulid *Dodecaceria* “*pacifica*”, with the barnacle *Balanus nubilus* (Darwin, 1854), and the mussel *Volsella modiolus*. In rhodolith beds.

**Remarks.** *Lepidonotus caeruleus* presents a wide distribution. Further studies are required to enable us to understand if it is a cryptogenic species, because there are no studies to show that it represents a species complex, and its origin was not determined.

## 5. *Lepidonotus carinulatus* Grube, 1869

Figures 2, 3

*Polynoe* (*Lepidonotus*) *carinulata* — Grube 1869; Grube 1878: 26–27, pl. 3: figs 2–2 b. *Lepidonotus carinulatus*.—Willey 1905: 248–249, pl. 1: figs 7–11, Fauvel 1911: fig. 1, 1918, 1919a, Augener 1922: figures 3–3b, Seidler 1923, Fauvel 1933, Wesenberg-Lund 1949, Fauvel 1955, Mohammad 1971, Day 1975: figs 2 g–k, Amoureux et al. 1978, Hanley and Burke 1991: fig 20, Imajima 1997: figs 45–46, Rasheed and Mustaqim 2003: figs 7–8, Barnich et al. 2004.

*Lepidonotus tenuisetosus*. — Mohammad 1971: 288, Gravier 1902.

**Diagnosis.** With two nuchal nodules and without nuchal folds; black pigmentation on antennae, cirrophores and tentaculophores; elytra with dark pigmentation; elytral surface reticulate, with oval to rounded macro- and microtubercles, anterior ones flattened, smooth or carinate, central and posterolateral ones warty; margin with fringing papillae; neurochaetae bidentate.

**Description.** Body elongated, flattened dorsoventrally, subrectangular in cross-section; 2 mm in length, including palps and pygidial cirri; 26 chaetigerous segments, and pygidium (Figure 2a–b). Prostomium bilobed, rounded to hexagonal, lateral antenna with terminal insertion (Figure 3a). Two pairs of eyes; anterior pair dorsolateral, near widest portion of prostomium, posterior pair near posterior end of prostomium, converging towards midline, buccal segment without nuchal fold, but with pair of nuchal nodules (Figure 3a–b). Median and lateral antennae, tentacular and dorsal cirri with two dark rings (Figure 2a), both having subdistal swelling, culminating abruptly in sharp point; ceratophores cylindrical, median antenna larger than lateral antennae. Pair of palps, slightly smaller than median antenna, culminating in thin point, with 8 longitudinal rows of papillae.

Tentacular segment with two pairs of cylindrical tentaculophores, with three prostomial chaetae on anterodorsal bases. Buccal cirri larger than ventral cirri, with cylindrical cirrophores. Pharynx with nine pairs of papillae and two pairs of maxillae. Facial tubercle present. Dorsal cirri with same coloration as median antenna, larger than ventral cirri, with cylindrical cirrophores.

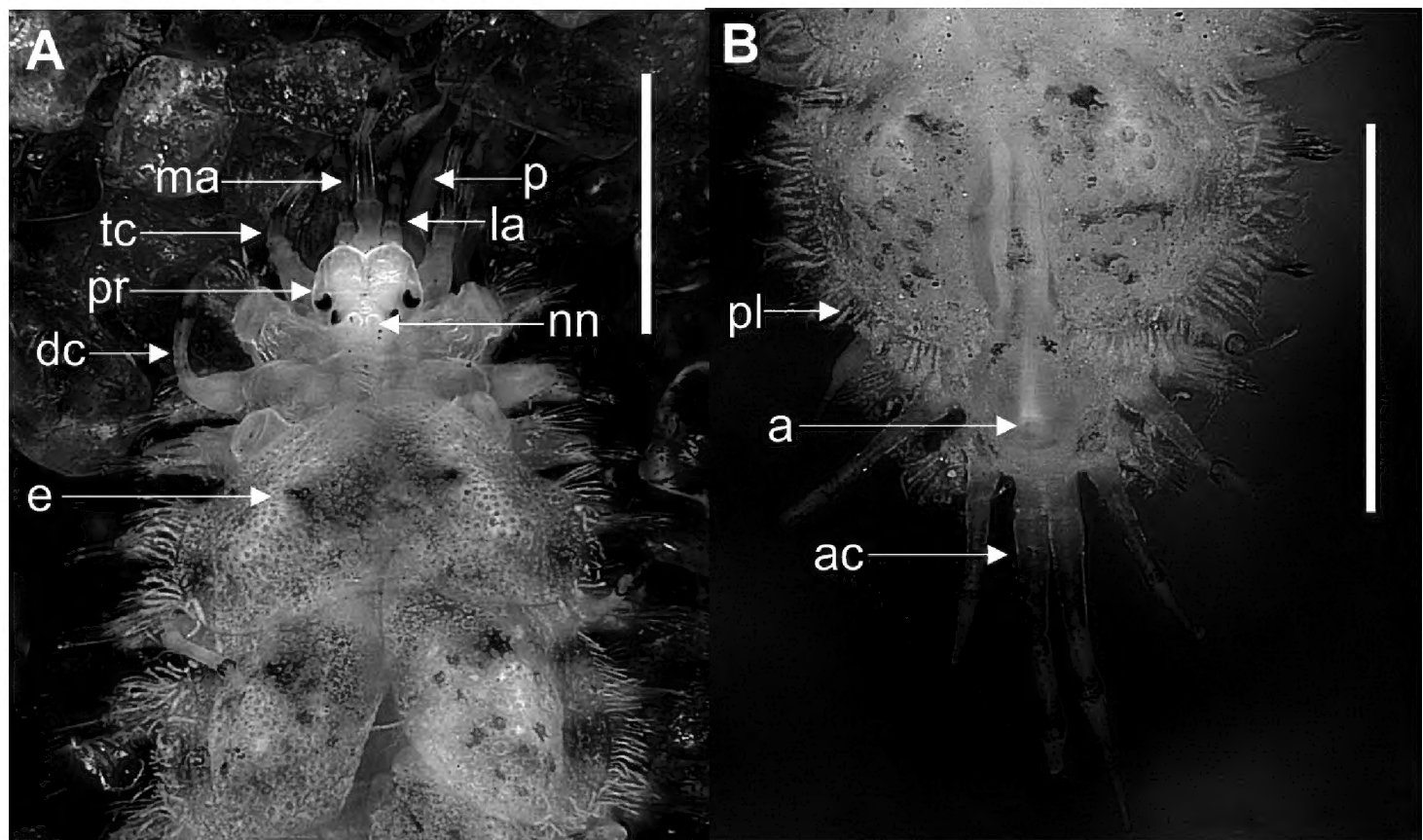
Parapodia biramous (Figure 3b), prechaetal lobe quadrate or subtriangular, postchaetal lobe short and subtriangular, both with acicula; short notopodia on anterodorsal side of neuropodia. Notochaetae spinous, superior row slender, serrated on convex side (Figure 3c). Neuropodia large, truncate, distally cleft with prechaetal lobe slightly longer than poschaetal lobe. Neurochaetae stouter than notochaetae, falcate, subdistally thickened, with several rows of spines, distal spines usually much larger than basal ones, and bidentate tips with small secondary tooth (Figure 3d).

Twelve pairs of elytra, covering dorsum entirely, with dark-brown pigmentation; pairs until last chaetiger segment following order: 2, 4, 5, 7, 9, 11, 13, 15, 17, 19, 21 and 23; long papillae along external edge. First three pairs of elytrae more ornate, with tubercles (Figure 3e); on 11th and 12th pair with ornamentation similar to that in



**Figure 1.** Map showing the distribution of genus *Lepidonotus* in South America: **1** *L. arenosus* **2** *L. brasiliensis* **3** *L. brasiliensis laevis* **4** *L. caeruleus* **5** *L. carinulatus* **6** *L. crosslandi* **7** *L. crosslandi peruana* **8** *L. furcillatus* **9** *L. hupferi* **10** *L. margaritaceus* **11** *L. natalensis* **12** *L. nesophilus* **13** *L. panamensis* **14** *L. savignyi* **15** *L. sublevis* **16** *L. tenuisetosus* **17** *L. tomentosus* **18** *L. viribilis*.

first pair. Most carinate macrotubercles in central region (Figure 3f–g), surrounded by microtubercles (Figure 3h); after 4th or 5th pair (Figure 3i), small warty tubercles give impression of smooth elytra (Figure 3j).



**Figure 2.** **A** Anterior end of *Lepidonotus carinulatus* showing the dark ring in the antennae and tentacular cirrus (anterodorsal view of the prostomium) **B** Anterior end showing the dorsal anus in the last chaetigerous segment. Scale bars: 1 mm (**A**, **B**). (p, palp; ma, median antennae; la, lateral antennae; tc, tentacular cirri; pr, prostomium; nn, nuchal nodules; dc, Dorsal cirrus; e, elytra; pl, papillae; a, anus; ac, anal cirri.

Nephridial papillae starting from chaetiger 7, with peduncular aspect. Short ventral cirri with thin tip; pair of long anal cirri with same coloration as median antenna; dorsal anus in last chaetiger segment (Figure 2b).

**Habitat.** Recorded between the intertidal and 60 m; elsewhere reported down to 200 m (Hartmann-Schröder and Hartmann 1991, Wehe 2006).

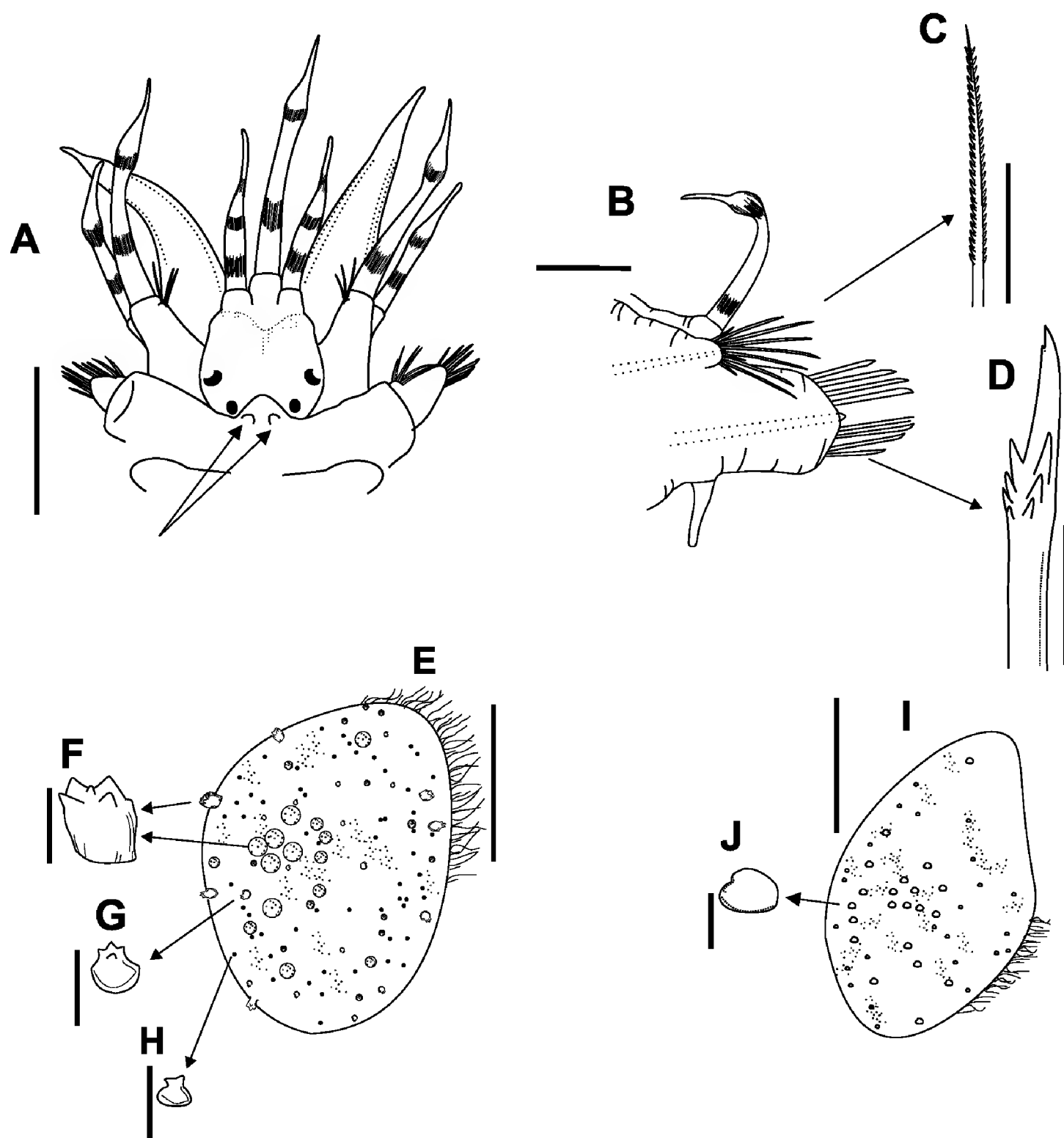
**Syntype.** ZMB 1071.

**Type locality.** Bohol, Philippines.

**Distribution.** Red Sea, Arabian Sea: Socotra Archipelago, Gulf of Oman, Arabian Gulf. Elsewhere: Indo-West Pacific: Madagascar, Sri Lanka, Indonesia, Philippines, Hong Kong, South China Sea, Australia, New Caledonia, Japan (Willey 1905, Fauvel 1953, Hanley and Burke 1991, Hanley 1992, Imajima 1997, Barnich et al. 2004).

New records: Coast of Paraíba, Brazil: Pedra da Galé, Pitimbú (07°28'17"S, 34°47'26"W), POLY-UFPB 1501; Rio Mamanguape (06°48'44"S, 34°54'48"W), POLY-UFPB 1502, 1503.

**Remarks.** Zenetos et al. (2010) assigned *L. carinulatus* as an exotic species with an origin in the Indo-Pacific/Red Sea. Its establishment success in the Mediterranean is questionable, because its description, based on local specimens, was insufficient. It is an exotic species in Brazilian waters with casual establishment success; because only the present records are known, it is presumed to be non-established in the Mediterranean area (Zenetos et al. 2010).



**Figure 3.** *Lepidonotus carinulatus* **A** pair of nuchal nodules on 2nd segment in dorsal anterior view **B** right parapodia of 4th segment, dorsal view **C** notochaetae, dorsal view **D** neurochaetae, ventral view **E** first right elytra, dorsal view **F–G** macrotubercle **H** microtubercles **I** right elytra of 5th segment **J** macrotubercle. Scale bars: 1 mm (**A**); 0,5 mm (**B–D**), 0.05 mm (**E–J**).

## 6. *Lepidonotus crosslandi* Monro, 1928

*Lepidonotus crosslandi* Monro, 1928: 553–555, figs 1–4 (Callao and Bahia Independencia, Peru).—Hartman 1939: 109, pl. 5, figs 62–69, 1959.—Fauchald and Reimer 1975: 80 (Panama).—Reimer 1976: 242 (Pacific Panama).—Fauchald 1977: 6 (Pacific Panama).—Von Prahl et al. 1979 (Pacific Colombia).—Cruz et al. 1980: 92 (Ecuador).—Laverde-Castillo 1986 (Colombian Pacific).—Rivera 2008: 23 (El Salvador).

**Holotype.** USNM 54378.

**Type locality.** Balboa and Taboga, Panama.

**Distribution.** El Salvador to Peru.

### 7. *Lepidonotus crosslandi peruana* Hartmann-Schröder, 1962b

*Lepidonotus crosslandi*.—Hartman 1939: 42–43, pl. 5: figs 62–69 (Peru, 0–112.8m).  
[not *Lepidonotus crosslandi* Monro 1928]

*Lepidonotus crosslandi peruana* Hartmann-Schröder 1962b: 109–112, pl. 1: fig. 3; pl. 2: figs 1–2, 4 (Peru).—Hartman 1965: 9.—Romero et al. 1988: 138 (Peru).

**Holotype.** ZMH.

**Type locality.** Callao and Bahia de Independencia, Peru

**Distribution.** Presently known only from Peru. 0–112.8 m.

### 8. *Lepidonotus furcillatus* Ehlers, 1901b

*Lepidonotus furcillatus* Ehlers, 1901b: 254–255 (Tumbes and Cavancha, Chile), 1901a: 52–53, pl. 2, figs 1–8 (Chile).—Augener 1913: 102–103 (Australia).—Seidler 1924: 67–69.—Hartman 1939: 42, pl. 5: figs 57–58 (Colombian Pacific, Ecuador, Pacific Panama, and Chatham Island, New Zealand, 55–101m).—Wesenberg-Lund 1962: 15.—Day 1975: 171 (Australia).—Laverde-Castillo 1986.—Blake 1991 (Galapagos).—Hartwich 1993: 101.—Salazar-Vallejo and Londoño-Mesa 2004: 49.

**Syntypes.** NCB 3682, 3701.

**Type locality.** Tumbes and Cavancha, Chile.

**Distribution.** Western Pacific from Australia and New Zealand. East Pacific from Colombia to Chile and Galapagos Islands.

### 9. *Lepidonotus hupferi* Augener, 1918

*Lepidonotus hupferi* Augener, 1918: 133–136, pl. 2: figs 7–11 (Gold Coast, western Africa, Gana).—Seidler 1924: 69–70.—Day 1934: 20 (Angola).—Hartman 1939: 43, pl. 6: figs 78–82 (Ecuador, Pacific Panama, and Pacific Mexico, 3.7–22 m).—Steinbeck and Rickets 1941 (Pacific Mexico).—Rioja 1947: 198–199, figs 1–8 (Pacific Mexico), 1962: 141 (Pacific Mexico).—Tebble 1955: 80 (Australia).—Fauvel and Rullier 1957: 48 (Senegal), 1959a: 146 (Gulf of Guinea), 1959b: 500 (Senegal and Cape Verde).—Day 1967: 37 (southern Africa).—Intes and Le Loeuff 1975: 275 (Ivory Coast, 10–30 m).—Cruz et al. 1980: 92 (Ecuador).—Batisda-Zavala 1993 (Pacific Mexico).—Hernández-Alcantara et al. 2003: 6 (Pacific Mexico).—Salazar-Vallejo and Londoño-Mesa 2004: 49.—Pleijel 2007: 179 (New Caledonia).

**Holotype** *Lepidonotus hupferi*. Fauvel, 1950: 345 (Senegal). ZMH V-530

**Type locality.** Gold Coast, western Africa, Ghana.

**Distribution.** Eastern Atlantic from Senegal and Cape Verde. Western Pacific from New Caledonia and Australia. Eastern Pacific from Mexico to Ecuador. 10–30 m.

**Remarks.** *Lepidonotus hupferi* presents a wide distribution. Further studies are required to enable us to understand if it is a cryptogenic species, because there are no studies to show that it is a species complex, and its origin was not determined

# 10. *Lepidonotus margaritaceus* Kinberg, 1856

*Lepidonotus margaritaceus* Kinberg, 1856: 383 (Guayaquil, Ecuador); 1858: 11–12, pl. 3: fig. 12; pl. 10: fig. 49.—Baird 1865: 182.—Grube 1876: 62.—Seidler 1924: 33–34.—Hartman 1948: 23, pl. 3: figs 1–3.

*Polynoe margaritacea*.—Quatrefages 1866: 223–224.

**Holotype.** SSM.

**Type locality.** Guayaquil, Ecuador.

**Distribution.** Known only from the type material from Ecuador.

# 11. *Lepidonotus natalensis* Day, 1951

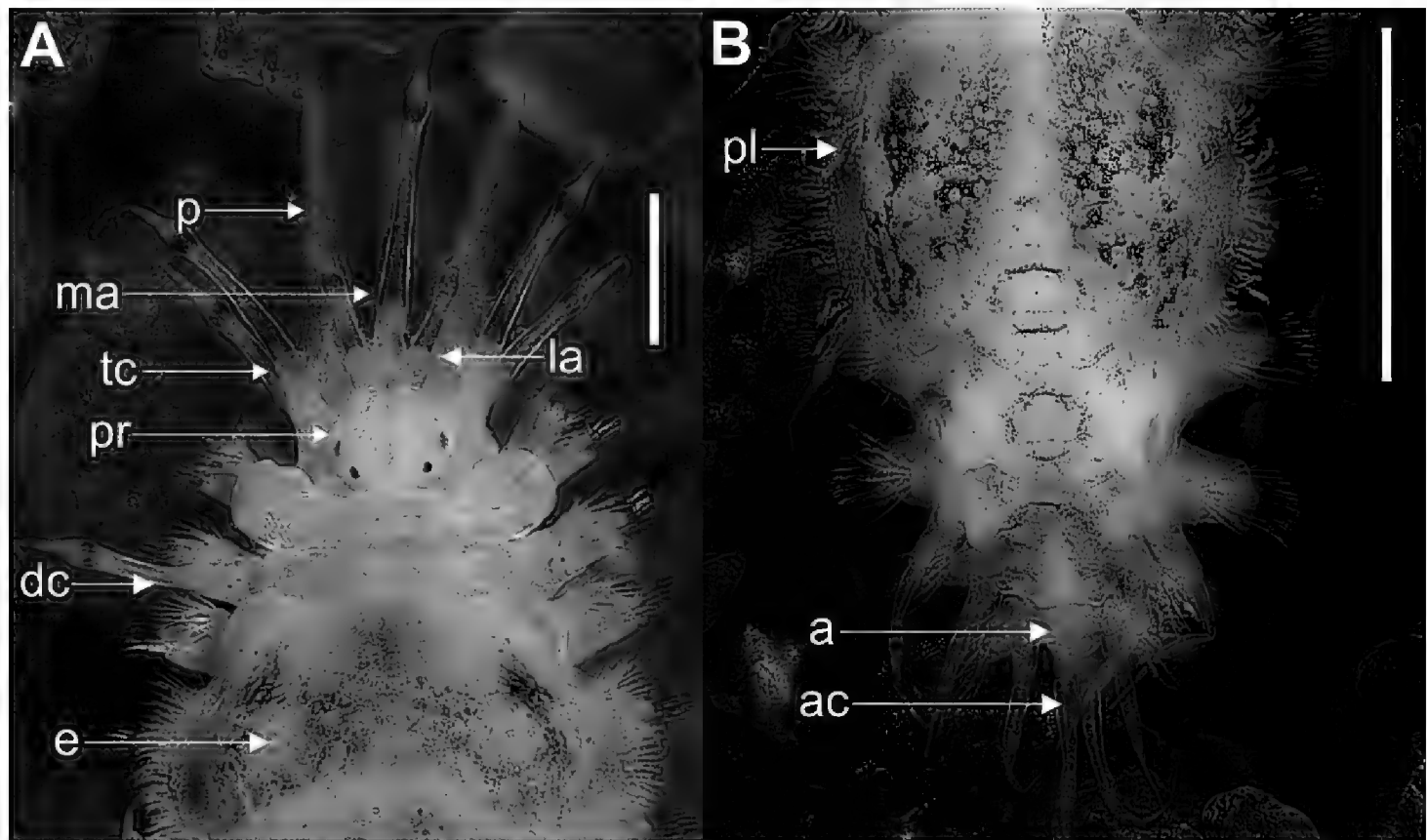
Figures 4, 5

*Lepidonotus natalensis* Day, 1951; fig. 1 e–l [removed from synonymy with *L. tenuisetosus* (sensu Day 1967)].

*Lepidonotus tenuisetosus* Fauvel, 1927: 414 [not Gravier, 1902].

**Diagnosis.** Without nuchal fold; some elytrae with group of papillae in center, dark pigmentation and small tubercles after 4th or 5th pair, giving impression of smooth elytra; elytra margin and surface with long slender, digitiform papillae; notochaetae partially threadlike; neurochaetae unidentate.

**Description.** Body elongate, flattened dorsoventrally; with 26 chaetigerous segments, 2 mm in length, including palps and pygidial cirrus, 2 mm in width, including chaetae (Figure 4a–b). Dorsum and sides of parapodia pigmented black. Prostomium bilobed, rounded, slightly hexagonal, black pigmentation at base of ceratophores (Figure 5a). Lateral antenna with terminal insertion; two pairs of eyes, anterior pair dorsolateral, near widest portion of prostomium, posterior pair near base of prostomium, converging towards midline (Figure 5b). Median and lateral antennae, tentacular and dorsal cirri with two dark rings; first more elongated than second, both having subdistal swelling, culminating abruptly in sharp point; ceratophores cylindrical, median antenna larger than lateral antennae. Palps paired, same length as median antenna, culminating almost abruptly into thin point, with 8 longitudinal rows of papillae.

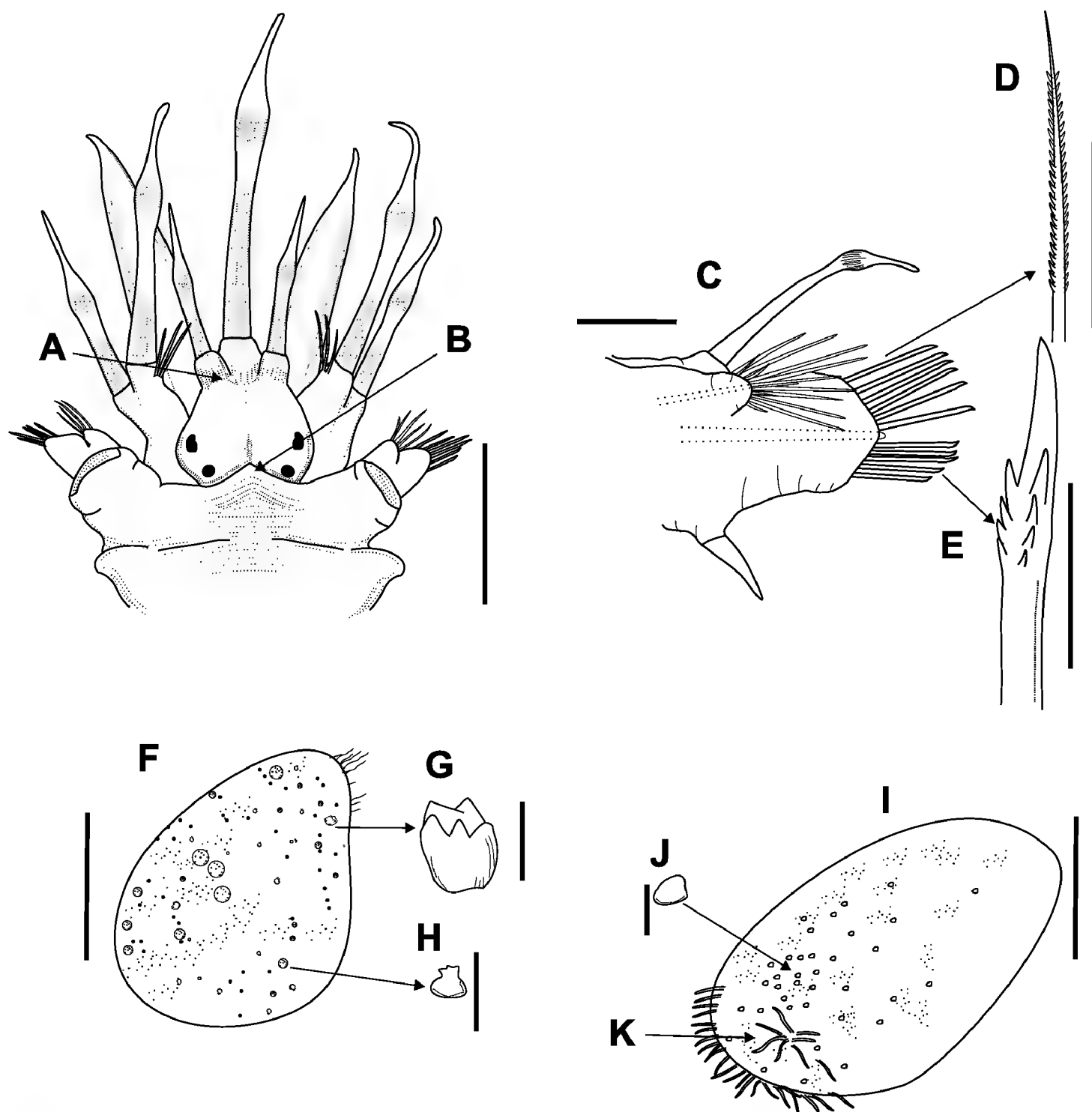


**Figure 4.** **A** Anterior end of *Lepidonotus natalensis* showing the pigmentation of antennae and tentacular cirri **B** dorsal anus in the 23rd segment chaetigerous, dorsal posterior view. Scale bars: 1 mm (**A–B**). (p, palp; ma, median antennae; la, lateral antennae; tc, tentacular cirri; pr, prostomium; nn, nuchal nodules; dc, dorsal cirrus; e, elytra; pl, papillae; a, anus; ac, anal cirri.

Tentacular segment with two pairs of cylindrical tentaculophores, with three prostomial chaetae on anterodorsal bases. Buccal cirri larger than ventral cirri, with cylindrical cirrophores. Pharynx with 9 pairs of papillae and 2 pairs of maxillae. Facial tubercle present. Dorsal cirri with same coloration as median antenna, larger than ventral cirri, with cylindrical cirrophores.

Parapodia biramous (Figure 5c), prechaetal lobe quadrate or subtriangular, postchaetal lobe short and subtriangular, both with acicula; short notopodia on anterodorsal side of neuropodia. Notochaetae spinous, superior row slender, partially thread-like, with fine, pointed tips (Figure 5d). Neuropodia large, truncate, distally cleft, with prechaetal lobe slightly longer than poschaetal lobe. Neurochaetae stouter than notochaetae, falcate, subdistally slightly thickened, with few rows of spines below slightly bent, blunt, unidentate tips (Figure 5e).

Twelve pairs of elytra covering dorsum entirely, with dark or dark-brown pigmentation; pairs until last chaetiger segment following order: 2, 4, 5, 7, 9, 11, 13, 15, 17, 19, 21 and 23. First three pairs more ornate, with macro and microtubercles (Figure 5f–h); these tubercles located more posteriorly on elytra after 4th or 5th pair, giving impression of smooth elytra; on 11th and 12th pairs ornamentation similar to that in first pairs. Most of macrotubercles on central region, surrounded by microtubercles (Figure 5i–j). Very long digitiform papillae along external edge, and group of papillae near inferior base of elytra or sometimes next to center (Figure 5k).



**Figure 5.** *Lepidonotus natalensis* **A** anterodorsal view of prostomium **B** second segment showing the anterior peak **C** right parapodia of 4th segment, dorsal view **D** notochaetae, dorsal view **E** neurochaetae, ventral view **F** first right elytra, dorsal view **G** macrotubercle **H** microtubercles **I** right elytra of 6th segment **J** macrotubercle **K** group of papillae. Scale bars: 1 mm (**A**); 0,5 mm (**B–D**); 0.05 mm (**B–D**).

Nephridial papillae starting from chaetiger 7, with peduncular aspect. Short ventral cirri with thin tip; one pair of short anal cirri with same coloration as median antenna; anus dorsal in 23rd chaetigerous segment (Figure 4b).

**Habitat.** Intertidal zone (algae, rhodoliths) to 5 m, from the coast of Paraíba.

**Holotype.** BMNH 1961.16.1

**Type locality.** Natal, South Africa.

**Distribution.** Suez Canal, Arabian Sea: Karachi; Port Edward, Natal, South Africa, Indian Ocean (Day 1951; Wehe 2006).

**New records.** Barra de Camaratuba, Mataraca, Paraíba, Brazil (06°36'14.17"S, 34°57'48.79"W).

(POLY-UFPB 1504), adult from Barra de Camaratuba, Mataraca (06°36'14.17"S, 34°57'48.79"W), Paratypes (POLY-UFPB 1505, 1506), Prainha, Baía da Traição (06°41'23.77"S, 34°55'48.47"W), Paraíba, Brazil.

**Remarks.** *Lepidonotus natalensis* presents a wide distribution. Further studies are required to enable us to understand if it is a cryptogenic species, because there are no studies to show that it is a species complex, and its origin was not determined.

## 12. *Lepidonotus nesophilus* Chamberlin, 1919

*Lepidonotus nesophilus* Chamberlin, 1919: 75–78, pl. 4: figs 1–7; pl. 5: fig. 13 (Chatham Island, Galapagos Archipelago).—Hartman 1939: 38–39, pl. 7: figs 83–95 (Galapagos Islands, 22–73 m) [not Tenacatitla Bay, Mexico = undescribed species].—Rioja 1941: 680 (Mexican Pacific), 1962: 141 (Mexican Pacific).—Fauchald and Reimer 1975: 80 (Panama).—Fauchald 1977: 6 (Pacific Panama).—Van der Heiden and Hendrickx 1982 (Mexican Pacific).—Blake 1991 (Galapagos).—Hernández-Alcantara et al. 2003: 6.—Salazar-Vallejo and Londoño-Mesa 2004: 49.—Salazar-Silva 2006: 151.

**Holotype.** USNM 19400.

**Type locality.** Chatham Island, Galapagos Archipelago

**Distribution.** Eastern Pacific from Mexico to Galapagos.

## 13. *Lepidonotus panamensis* Hartman, 1939

*Lepidonotus pomareae panamensis* Hartman, 1939: 44–46, pl. 6: figs 70–77 (Pacific Panama, 27–91 m).

*Lepidonotus panamensis*.—Hartman 1959: 90.—Rullier and Amoureux 1979: 152 (Bahia).—Amaral and Nonato 1982: 25 (Espírito Santo).

**Holotype.** USNM 47981.

**Type locality.** Pacific, Panama.

**Distribution.** Eastern Pacific: Panama Bay. Southwestern Atlantic from Bahia and Espírito Santo. Brazil, 27–91 m.

## 14. *Lepidonotus savignyi* Grube, 1856

*Polynoe Savignyi* Grube, 1856: 45 (Callao, Peru); 1876: 61.—Seidler 1924: 88.

*Lepidonotus savignyi*.—Baird 1865: 183.—Augener 1925 (West Indies).—Salazar-Vallejo and Eibye-Jacobsen 2012: 1398.

*Polynoe Savignyi*.—Quatrefages 1866: 225.

**Type locality.** Callao, Peru.

**Distribution.** Eastern Pacific from Peru. Western Atlantic from the West Indies.

### 15. *Lepidonotus sublevis* Verrill, 1873

*Lepidonotus sublevis*—Verrill 1973.—Verrill and Smith 1874: 581, pl. 10: fig. 42 (Savin Rock, near New Haven, and Vineyard Sound, Massachusetts); Verrill 1882: 300, pl. 4: fig. 2; pl. 6: fig. 3 (New England).—Dorner 1877: 66 (Massachusetts).—Wood 1885: 532 (New England).—Heilprin 1888 [1906]: 6, pl. 8: fig. 8 (New Jersey).—Andrews 1891: 278 (North Carolina).—Drowne 1896: 74 (Massachusetts).—Summer et al. 1913: 618 (Massachusetts).—Pratt 1923: 285.—Hartman 1942: 22–23, figs 7–12, 1944; 1945: 10 (North Carolina); 1951: 17–18 (Gulf of Mexico), 1954: 413 (Gulf of Mexico).—Ferguson and Jones 1949 (Virginia).—Behre 1950: 11 (Louisiana).—Hedgpeth 1950: 75 (Texas; on lower surface of *Renilla muelleri* [as *R. mülleri*]).—Pratt 1951: 328.—Wells 1961: 247 (North Carolina).—Pettibone 1963: 18–19, fig. 3e (Massachusetts to Florida, in gastropod shells with *Pagurus pollicaris*).—Wells and Gray 1964 (North Carolina).—Smith 1964: 76 (Massachusetts).—Yentsch et al. 1966: 117 (Massachusetts).—Calder and Brehmer 1967 (Virginia).—Conner et al. 1972: 1503.—Boesch 1973: 230 (Virginia).—Day 1973: 6 (Beaufort, North Carolina, 0–100 m).—Fotheringham 1976: 574 (Texas; comensal with *Clibanarius vittatus* and *Pagurus pollicaris*).—Gardiner 1976: 86, fig. 1f–g (North Carolina; associated with *Clibanarius vittatus*, *Pagurus impressus*, *P. longicarpus*, and *P. pollicaris*).—Kinner and Maurer 1978: 217 (Delaware Bay).—Dueñas 1981 (Caribbean Colombia), 1999 (Caribbean Colombia).—Stainken 1984: 100 (New York).—Weston 1984: 27 (Gulf of Mexico).—Ismail 1985: 384 (New Jersey).—Ibarzabal 1986: 2 (Cuba, 2 m); 1989b: 2–3, figs. 1a–f (Cuba).—Steimle and Caracciolo-Ward 1989: 148 (New York).—Dauer 1991 (comensal of *Clibanarius vittatus*, *Pagurus annulipes*, *P. longicarpus*, and *P. pollicaris*).—Bastida-Zavala 1995: 14 (Pacific Mexico).—Pollock 1998: 197 (northeast North America).—Posey et al. 1998: 151 (Gulf of Mexico).—Sagasti et al. 2000: 481 (Chesapeake Bay).—McDermott 2001: 624 (New Jersey; obligate symbiont of *Pagurus longicarpus*).—Baéz and Ardilla 2003: 102 (Caribbean Colombia, to 10 m).—Williams 2003: 17 (commensal of *Pagurus longicarpus*).—Williams and McDermott 2004: 28.—Struck et al. 2008: 631.—Fauchald et al. 2009: 768 (Gulf of Mexico).—Gobin 2010: 151 (Trinidad and Tobago).—Struck and Halanych 2010: 271.—Piquet et al. 2011: 417 (Antarctica).—Golombek et al. 2013: 315.

*Lepidonotus sublaevis*.—Seidler 1924: 41.—Gambi et al. 1997: 1055.

*Lepidonotus pallidus* Treadwell, 1939a: 3, figs 10–12 (Texas).

*Lepidonotus squamatus*.—Warren 1942: 45 (Louisiana).—Cowles 1930: 341.

[not *Lepidonotus squamatus* (Linnaeus, 1758); [= *Lepidonopsis humilis* (Augener 1922)].

**Holotype.** PMNH 3-5.

**Type locality.** New England (Northeastern USA).

**Distribution.** Western Atlantic from Massachusetts to Colombia, with one record for Antarctica. Eastern Pacific from Mexico. From 2 to 10 m.

**Biology.** This species is commensal with the hermit crabs *Clibanarius vittatus* (Bosc, 1802), *Pagurus annulipes* (Stimpson, 1860), *P. impressus* (Benedict, 1892) *P. longicarpus* Say, 1818, and *P. pollicaris* Say, 1818. It was found on the lower surface of the sea pansy, *Renilla muelleri* Kölliker, 1872 (Martin and Britayev 1998).

## 16. *Lepidonotus tenuisetosus* (Gravier, 1902)

*Euphione tenuisetosa* Gravier, 1902: 222–226, figs 228–231, pl. 8: figs 123–125 (Djibouti, Gulf of Tadjoura, Gulf of Aden).—Fauvel 1911: 368 (Persian Gulf).—Solís-Weiss et al. 2004: 13.

*Lepidonotus tenuisetosus*.—Fauvel 1919a: 330–332 (Madagascar), 1927: 411 (Suez Canal); 1933: 15 (India); 1953: 36–37, fig. 14c–f (India).—Seidler 1924: 25–27 (Red Sea).—Day 1934: 20 (Madagascar); 1953: 400 (South Africa); 1962: 632 (Madagascar); 1967: 82, fig. 1.14a–e (South Africa, Mozambique, Madagascar, and Red Sea); 1974 (Mozambique).—Monro 1934: 358 (China).—Aziz 1938 (Pakistan).—Okuda 1940: 4–6, fig. 2 (Japan).—Day and Morgans 1956 (South Africa).—Kalk 1958: 232 (Mozambique).—Macnae and Kalk 1958 (Mozambique).—Imajima and Hartman 1964: 27 (Japan).—Tampi and Rangarajan 1964: 100 (Andaman Islands).—Wu 1968: 27–28 (China).—Achari 1969: 31 (Andaman Islands).—Mohammad 1971: 288 (Kuwait).—Ben-Eliahu 1972: 190, 195 (Suez Canal).—Santhakumari 1973: 179 (India).—Hartman 1974 (Indian Ocean).—Peyrot-Clausade 1974 (Australia).—Sarma 1974: 158 (India).—Rullier and Amoureux 1979: 152 (Bahia).—Buzhinskaya et al. 1980: 228 (Indo-Pacific).—Soota et al. 1980 (Andaman and Nicobar Islands), 1981 (India).—Amaral and Nonato 1982: 25 (Espírito Santo).—Shin 1982 (China), 1998 (China), 2000 (China).—Uschakov 1982: 106, 107, pl. 29: figs 1–8 (Russia).—Kirkegaard 1983: 194, fig. 1.14a–e (Sierra Leone and French Guinea, 15–65 m).—Ansari et al. 1986: 363 (India).—Cantone 1987: 75, 80 (Somalia).—Gil et al. 1987: 1 (Korea).—Srikrishnadhas et al. 1987 (India).—Palpal-Latoc 1990 (Philippines); 1994: 67 (Philippines).—Hanley 1992: 366–367 (China, 0–0.5 m).—Hong and San 1993 (Vietnam).—Wang and Huang 1994: 4 (China).—Misra 1995: 93 (India).—Mustaquim 1997: 221 (Pakistan).—Wu et al. 1997 (China).—Che et al. 1999 (China).—Kumar 2000: 441 (India).—Misra and Chakraborty 2000: 219 (India).—Paxton and Chou 2000: 210 (China).—Bellan 2001: 224 (Europe).—Pillai 2001: 122 (India).—Sato 2001 (Japan).—Wehe and Fiege 2002: 113 (Arabian Peninsula).—Barnich and Fiege 2003: 86, fig. 44 (Mediterranean Sea).—Rasheed and Mustaquim 2003: 70–72, fig. 12 (Pakistan).—Barnich et al. 2004: 300–301 (China).—Khan and Murugesan 2005: 116 (India).—Zenetos et al. 2005: 73 (casual alien in Mediterranean), 2010 (introduced into Mediterranean).—Galil 2006 (Suez Canal), 2007: 301 (alien in Israel).—Kato et al. 2006: 30 (Japan).—Paiva 2006: 268 (Central Brazilian Platform).—Wehe 2006:

107–109, fig. 24a–l (Arabian Peninsula).—Pleijel 2007: 179 (New Caledonia).—Li and Ping 2008 (China).—Çinar 2009: 2286, fig. 2a (Turkish Mediterranean), 2013: 1259 (introduced from Red Sea to Mediterranean).—Naeini and Rahimian 2009: 59–60 (Persian Gulf and Gulf of Oman).—Sukumaran and Devi 2009: 1443 (India).—Li et al. 2010: 110 (China).—Amaral and Nallin 2011: 556 (São Paulo).—Çinar 2013: 264 (alien species in Turkey).—Rizzo et al. 2011: 133 (São Paulo).—Wang 2011: 746 (China).—Amaral et al. 2013: 453 (São Paulo).—Rajasekaran and Fernando 2012: 3 (Andaman and Nicobar Islands).—Katsanevakis et al. 2012: (alien species in European waters).—Kazmi and Naushaba 2013: 253 (Pakistan).

*Lepidonotus natalensis* Day, 1951: 9, fig. 1e–l (Port Edward, Natal, South Africa).—Wehe 2006: 101–103, fig. 21a–j (Arabian Peninsula).—Naeini and Rahimian 2009: 55–59 (Gulf of Oman).

*Lepidonotus* cf. *tenuisetosus*.—Yan and Huang 1993: 133 (China).

**Holotype of *Euphione tenuisetosa*.** MNHN Poly type 263.

**Type locality.** Djibouti, Gulf of Tadjoura, Gulf of Aden.

**Distribution.** Southwestern Atlantic from Bahia to São Paulo. Eastern Atlantic from Mediterranean to South Africa. Indian Ocean, Madagascar, Persian Gulf, and Red Sea. Western Pacific from Russia to Australia. 0–0.5 m.

**Remarks.** Zenetos et al. (2010) and Çinar (2013) assigned *L. tenuisetosus* as an exotic species for the Mediterranean Sea, with an origin in the Indo-Pacific/Red Sea. Its establishment success is uncertain, because it was recorded only once. We consider this species as an exotic species for the Brazilian coast.

## 17. *Lepidonotus tomentosus* (Grube, 1856)

*Polynoe tomentosa* Grube, 1856 (Punta Arenas, Chile).—Quatrefages 1866: 225–226.

*Polynoe (Lepidonotus) pilosella* Grube, 1878.

*Lepidonotus tomentosus*.—Fauvel 1919b: 472–473, fig. 1a–d (French Guyana), 1923 (French Guyana).—Hartman 1959.—Perkins and Savage 1975: 21.—Dean 2004 (Costa Rica).

**Type locality.** Punta Arenas, Chile.

**Distribution.** Eastern Pacific from Costa Rica and Chile. Western Atlantic from French Guyana.

**Remarks.** There is material in the USNM from the Galapagos Islands.

## 18. *Lepidonotus variabilis* Webster, 1879

*Lepidonotus variabilis* Webster, 1879: 205–208, pl. 1: figs 6–11; pl. 2: figs 12–14 (Virginia).—Andrews 1891: 278 (North Carolina; among hydroids and sponges).—

Hoagland 1919: 572 (Puerto Rico, 18 m).—Seidler 1924: 70–72.—Treadwell 1939b: 185 (Puerto Rico).—Warren 1942: 45 (Louisiana).—Hartman 1945: 10 (Florida), 1951: 18 (Gulf of Mexico), 1954: 413–414 (Gulf of Mexico).—Behre 1950: 11 (Louisiana).—Pearse and Williams 1951 (North and South Carolina).—Renaud 1956: 3, fig. 2 (Bahamas).—Rioja 1958: 221 (eastern Mexico).—Wells 1961: 247 (North Carolina).—Wells and Gray 1964 (North Carolina).—Ebbs 1966: 493–496, fig. 2a–h (Florida).—Forbes 1966: 278 (Florida; associated with *Cryptostrea* [as *Ostrea*] *permollis* and *Stelletta grubii*).—Dauer 1973: 193 (Gulf of Mexico; in sponge).—Day 1973: 6 (North Carolina, to 18 m).—Rullier 1974: 20 (Cuba; in sponges).—Gardiner 1976: 86, fig. 1k–n (North Carolina).—MacPhee 1978: 15 (Massachusetts; food of *Pseudopleuronectes americanus*).—Rodríguez-Gómez 1979: 27 (Caribbean Colombia); 1988 (Caribbean Colombia).—Tagatz et al. 1982: 134 (Alabama).—Ibarzábal 1986: 2 (Cuba, 3 m).—San Martín et al. 1986: 6–7 (Cuba).—Perkins 1998: 85 (Florida).—Dueñas 1999 (Caribbean Colombian).—Baéz and Ardilla 2003: 102 (Caribbean Colombian, 0.2–2 m).—Fauchald et al. 2009: 768 (Gulf of Mexico).—Gobin 2010: 5 (Trinidad and Tobago).  
not *Lepidonotus variabilis*.—Treadwell 1939b: 341. [= *Lepidonotus subleavis* Verrill, 1874]

**Type locality.** Virginia Coast, North American.

**Distribution.** Western Atlantic from Massachusetts to Colombia; 0.2–18 m.

**Biology.** Associated with the oyster *Cryptostrea permollis* (Sowerby, 1871), and with the sponge *Stelletta grubii* Schmidt, 1862. Food of the winter flounder, *Pseudopleuronectes americanus* (Walbaum, 1792). Lives among hydroids and sponges.

## Discussion

Herein, all information on members of the genus *Lepidonotus* found around South American coasts in the literature have been gathered, and additional data on two species collected in northeastern Brazil is provided. Eighteen species and subspecies are catalogued from South America, and three of them represent endemic taxa: *L. brasiliensis* and the subspecies *L. brasiliensis brevis* are endemic for Bahia, Brazil, while *L. margaritaceus* is endemic from Ecuador. The subspecies *L. brasiliensis brevis* is very similar to the species *L. brasiliensis*. However, only a detailed review can confirm if the two taxa are synonyms.

The species *L. caeruleus*, *L. carinulatus*, *L. hupferi*, *L. natalensis*, and *L. tenuisetosus* have a broad distribution, and have been reported from several countries. According to Zenetos et al. (2010) and Çinar (2013), the species *L. carinulatus* and *L. tenuisetosus* are exotic species in the Mediterranean and have possibly originated in the Indo-Pacific region/Red Sea. Their introduction area was through the Mediterranean and Sea of Marmara. Despite the broad distributions of *L. caeruleus*, *L. hupferi* and *L. natalensis*, more studies are needed to indicate if they may possibly represent exotic species, their possible areas of introduction, and into which ecological category they belong accord-

ing to the classification scheme of Çinar (2013). The possible origin of *L. natalensis* is Natal, South Africa, and it was possibly reported from the Suez Canal, Arabian Sea, and Karachi, Pakistan. It is herein reported from the southwest Atlantic, in the state of Paraíba. *Lepidonotus caeruleus* was first described off Rio de Janeiro, and was reported from the Pacific coast of North America and Japan. *Lepidonotus hupferi* was first described from the Eastern Atlantic from Senegal and Cape Verde, and later reported for the Pacific from New Caledonia, Australia, Mexico, and Ecuador. The remaining species present narrow distributions spanning few countries.

For some records essential features are not presented clearly, such as the ornamentation of the elytra, or the shape of the prostomium and chaetae. Some characters, such as form of nuchal folds, pigmentation of the antennae, and dorsal cirri, are not mentioned for the species *Lepidonotus brasiliensis* and *L. panamensis*. We are left with the view that species are very similar and difficult to distinguish. Therefore, revisionary studies of *Lepidonotus* are needed to establish whether cryptic species occur.

## Acknowledgments

We heartily thank Dr Mathan Magesh (Project Associate Conservation of Coastal and the Marine Resources Division National Centre for Sustainable Coastal Management, Chennai, India) for the corrections of the English grammar, and for contributions to the manuscript. To all members of the Laboratory of Invertebrates Paulo Young (LIPY) for their work in assembling the collection of marine invertebrates, and in particular to Dr. Carmen Alonso Samiguel for her dedication in the preservation of this collection. We thank Dr Christopher Glasby (MAGNT), and the anonymous referees for suggestions to improve this paper. We acknowledge CNPq and FACEPE for pos-doctoral scholarship to J.E. De Assis and the productivity grant to M.L. Christoffersen.

## References

- Achari GPK (1969) Catalogue of polychaetes in the reference collections of the Central Marine Fisheries Research Institute. Bulletin of the Central Marine Fisheries Research Institute 7: 31–40.
- Amaral ACZ, Nonato EF (1982) Anelídeos poliquetos da costa brasileira: Aphroditidae e Polynoidae, volume 3. Coordenação Editorial, Conselho Nacional de Desenvolvimento Científico e Tecnológico, Brasília, 46 pp.
- Amaral ACZ, Nallin SAH (2011) Biodiversidades e ecossistemas bentônicos marinhos do litoral norte de São Paulo. Sudeste do Brasil. Universidade Estadual de Campinas, Campinas, São Paulo, 573 pp.
- Amaral ACZ, Nallin SAH, Steiner TM, Forroni TO, Gomes DF (2013) Catálogo das espécies de Annelida Polychaeta do Brasil. [http://www.ib.unicamp.br/museu\\_zoologia/files/lab\\_museu\\_zoologia/Catalogo\\_Polychaeta\\_Amaral\\_et\\_al\\_2012.pdf](http://www.ib.unicamp.br/museu_zoologia/files/lab_museu_zoologia/Catalogo_Polychaeta_Amaral_et_al_2012.pdf) [accessed in 06/17/2015]

- Amoureux L, Rullier F, Fishelson L (1978) Systématique et écologie d'annélides polychètes de la Presqu'île du Sinai. *Israel Journal of Zoology* 27: 57–163.
- Andrews EA (1891) Report upon the Annelida Polychaeta of Beaufort, North Carolina. *Proceedings of the United States National Museum* 14 (852): 277–302. doi: 10.5479/si.00963801.14-852.277
- Ansari ZA, Ingole BS, Parulekar AH (1986) Effect of high organic enrichment of benthic polychaete population in an estuary. *Marine Pollution Bulletin* 17: 361–365. doi: 10.1016/0025-326X(86)90249-3
- Augener H (1913) Polychaeta I. Errantia. In: Michaelsen W, Hartmeyer R (Eds) *Die Fauna Südwest-Australiens. Ergebnisse der Hamburger südwest-australischen Forschungsreise, 1905. vol. 4, Lieferung 5.* Gustav Fisher, Jena, 63–30.
- Augener H (1918) Polychaeta. *Beiträge zur Kenntnis der Meeresfauna Westafrikas* 2: 67–625.
- Augener H (1922) Revision der australischen Polychaeten-Typen von Kinberg. *Arkiv för Zoologi* 14(8): 1–42.
- Augener H (1925) Über westindische und einige andere Polychaeten-type von Grube (Oersted), Krøyer, Mörch und Schmarda. *Universitetets Zoologiske Museum Kobenhavn* 39: 1–47.
- Aziz ND (1938) Fauna of Karachi, 2. Polychaetes. *Memoirs of the Department of Zoology Punjab University Lahore* 1: 19–52.
- Baéz DP, Ardilla NE (2003) Poliquetos (Annelida: Polychaeta) del Mar de Caribe colombiano. *Biota Colombiana* 4: 89–109.
- Baird W (1865) Contributions toward a monograph of the species of annelides belonging to the Aphroditacea, containing a list of the known species, and a description of some new species contained in the national collection of the British Museum. *Journal of the Linnean Society of London* 8: 172–202. doi: 10.1111/j.1096-3642.1865.tb02438.x
- Barnich R, Fiege D (2003) The Aphroditoida (Annelida, Polychaeta) of the Mediterranean Sea. *Abh. Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft* 559: 1–167.
- Barnich R, Fiege D, Sun RP (2004) Polychaeta (Annelida) of Hainan Island, South China Sea. Part III. Aphroditoida. *Species Diversity* 9: 285–329.
- Bastida-Zavala JR (1993) Taxonomía y composición biogeográfica de los poliquetos (Annelida: Polychaeta) de la Bahía de la Paz, B. C. S., México. *Revista de Investigación Científica* 4: 11–39.
- Bastida-Zavala JR (1995) Poliquetos (Annelida: Polychaeta) del arrecife coralino de Cabo Pulmo - Los Frailes, BCS. México. *Revista de Zoología* 6: 9–29.
- Behre EH (1950) Annotated list of fauna of the Grand Isle region. *Occasional Papers of the Marine Laboratory Louisiana State University* 6: 1–66.
- Bellan G (2001) Polychaeta. In: Costello MJ, Embrow C, White RJ (Eds) *European register of marine species: a checklist of the marine species in Europe and a bibliography of guides to their identification.* Collection Patrimoines Naturels, 50. Museum National d'Histoire Naturelle, Paris, 214–231.
- Ben-Eliahu MN (1972) Polychaeta Errantia of the Suez Canal. *Contributions to the knowledge of Suez Canal migration.* *Israel Journal of Zoology* 21: 189–237.
- Berkeley E (1923) Polychaetous annelids from the Nanaimo District. 1. Syllidae to Sigalionidae. *Contributions to Canadian Biology New Series* 1: 203–218. doi: 10.1139/f22-011

- Berkeley E, Berkeley C (1941) On a collection of Polychaeta from Southern California. *Bulletin of the Southern California Academy of Sciences* 40(1): 16–60.
- Berkeley E, Berkeley C (1942) North Pacific Polychaeta, chiefly from the west coast of Vancouver Island, Alaska, and Bering Sea. *Canadian Journal of Research* 20(7): 182–208. doi: 10.1139/cjr42d-016
- Berkeley E, Berkeley C (1948) Annelida, Polychaeta, Errantia. *Canadian Pacific Fauna. Fisheries Research Board of Canada, Toronto* 9b(1): 1–100.
- Berlandi RM, Figueiredo MAD, Paiva PC (2012) Rhodolith morphology and the diversity of polychaetes off the southeastern Brazilian coast. *Journal of Coastal Research* 28: 280–287. doi: 10.2112/11T-00002.1
- Blake JA (1991) The polychaete fauna of the Galapagos Islands. *Topics in Geobiology* 8: 75–96. doi: 10.1007/978-1-4899-0646-5\_4
- Boesch DF (1973) Classification and community structure of macrobenthos in the Hampton Roads Area, Virginia. *Marine Biology* 21: 226–244. doi: 10.1007/BF00355253
- Buzhinskaya GN, Obut AM, Potin VV (1980) Errant polychaets (sic) from coral reefs and island of the Indian and Pacific oceans. In: Preobrazhenski BV, Krasov EV (Eds) *Biology of coral reefs. Morphology, systematics, ecology*. Akademia Nauka SSSR, Moscow, 225–256.
- Calder DR, Brehmer ML (1967) Seasonal occurrence of epifauna on test panels in Hampton Roads. Virginia Institute. *Journal of Oceanology and Limnology* 1: 149–164.
- Cantone G (1987) *Richerche sul litorale della Somalia. Popolamento polichetologico della coste Somale*. Italian Journal of Zoology 7: 73–85.
- Chamberlin RV (1918) Polychaetes from Monterey Bay. *Proceedings of the Biological Society of Washington* 31: 173–180.
- Chamberlin RV (1919) The Annelida Polychaeta. *Memoirs of the Museum of Comparative Zoölogy at Harvard College* 48: 1–514.
- Chambers SJ, Muir AL (1997) Polychaetes: British Chrysopetaloidea, Pisionoidea and Aphroditoidea. *Synopsis of the British Fauna* 54: 1–202.
- Che RGO, Qiu JW, Wu BL (1999) Distribution of Polychaeta in the southern waters of Hong Kong. *Asian Marine Biology* 15: 135–158.
- Çinar ME (2009) Alien polychaete species (Annelida: Polychaeta) on the southern coast of Turkey (Levantine Sea, Eastern Mediterranean), with 13 new records for the Mediterranean Sea. *Journal of Natural History* 43: 2283–2328. doi: 10.1080/00222930903094654
- Çinar ME (2013) Alien polychaete species worldwide: current status and their impacts. *Journal of the Marine Biological Association of the United Kingdom* 93: 1257–1278. doi: 10.1017/S0025315412001646
- Conner WG, Hinegardner R, Bachmann K (1972) Nuclear DNA amounts in polychaete annelids. *Experimentia* 28: 1502–1504. doi: 10.1007/BF01957880
- Cruz M, Gonzalez M, Gualancañay E, Villamar F (1980) Lista de la fauna sublitoral bentonica del Estero Salado Inferior, Ecuador. *Acta Oceanográfica del Pacífico* 1: 82–96.
- Cunha RJ, Güth AZ, Bromberg G, Sumida PYG (2013) Macrofauna associated with the brown algae *Dictyota* spp (Phaeophyceae, Dictyotaceae) in the Sebastião Gomes Reef and Abrolhos Archipelago, Bahia, Brazil. *Continental Shelf Research* 70: 140–149. doi: 10.1016/j.csr.2013.09.001

- Dauer DM (1973) Polychaete fauna associated with Gulf of Mexico sponges. *Florida Scientist* 36: 192–196.
- Dauer DM (1991) Functional morphology and feeding behavior of *Polydora commensalis* (Polychaeta: Spionidae). *Ophelia Supplement* 5: 607–614.
- Day JH (1934) On a collection of South African Polychaeta, with a catalogue of the species recorded from South Africa, Angola, Mozambique, and Madagascar. *Journal of the Linnean Society of London* 39 (263): 15–82. doi: 10.1111/j.1096-3642.1934.tb00259.x
- Day JH (1951) The polychaete fauna of South Africa. Part I. The intertidal and estuarine Polychaeta of Natal and Mosambique. *Annals of the Natal Museum* 12(1): 1–67.
- Day JH (1953) The polychaete fauna of South Africa. Part 2. Errant species from Cape shores and estuaries. *Annals of the Natal Museum* 12: 397–441.
- Day JH (1962) Polychaeta from several localities in the western Indian Ocean. *Proceedings of the Zoological Society of London* 139: 627–656. doi: 10.1111/j.1469-7998.1962.tb01597.x
- Day JH (1967) The polychaete fauna of South Africa. Part 1: Errantia. British Museum (Natural History), London, 458 pp.
- Day JH (1973) New Polychaeta from Beaufort, with a key to all species recorded from North Carolina. National Oceanographic and Atmospheric Administration Technical Report Natural Marine Fisheries Service Circulars 375: 1–140. doi: 10.5962/bhl.title.62852
- Day JH (1974) The ecology of Morrumbene estuary, Moçambique. *Transactions of the Royal Society of South Africa* 41: 43–96. doi: 10.1080/00359197409519438
- Day JH (1975) On a collection of Polychaeta from intertidal and shallow reefs near Perth, Western Australia. *Records of the Western Australian Museum* 3(3): 167–208.
- Day JH, Morgans JFC (1956) The ecology of South African estuaries. Part 7. The biology of Durban Bay. *Annals of the Natal Museum* 13: 259–312.
- Dean HK (2004) Marine biodiversity of Costa Rica: Class Polychaeta (Annelida). *Revista de Biología Tropical Supplement* 2(52): 131–181.
- De Assis JE, Alonso C, Brito RJ, Santos AS, Christoffersen ML (2012) Polychaetous annelids from the coast of Paraíba State, Brazil. *Revista Nordestina de Biologia* 21(1): 3–44.
- Díaz-Castaneda V, Rodríguez-Villanueva V (1998) Polychaete fauna from San Quintin Bay, Baja California, Mexico. *Bulletin Southern California Academy of Sciences* 97: 9–32.
- Dörner H (1877) *Guide to the New York Aquarium*. Atheneum, New York, 90 pp.
- Drowne FP (1896) Spile scraping and some of the marine invertebrates obtained by it. *Oregon Naturalist* 3: 73–74. doi: 10.1006/ecss.1996.0011
- Duarte LFL, Nalesso RC (1996) The sponge *Zygomyscale parishii* (Bowerbank) and its endobiotic fauna. *Estuarine, Coastal and Shelf Science* 42: 139–151.
- Dueñas PR (1981) Lista preliminar de los poliquetos. In: Werding B, Garzón J, Zea S (Eds) *Informe sobre los resultados de la expedición a las Islas de Providencia y Santa Catalina*. Project Final Report, Santa Marta, 42–47.
- Dueñas PR (1999) Listado de poliquetos colectados durante los años 1979-1999 en la bahía de Cartagena y Golfo de Morrosquillo. *Revista Milenio* 1: 9–18.
- Ebbs NK (1966) The coral-inhabiting polychaetes of the northern Florida reef tract. Part 1. Aphroditidae, Polynoidae, Amphinomidae, Eunicidae, and Lysaretidae. *Bulletin of Marine Science* 16: 485–555.

- Ehlers E (1901a) Die Polychaeten des magellanischen und chilenischen Strandes. Ein faunistischer Versuch. Festschrift zur Feier des Hundertfünfzigjährigen Bestehens des Königlichen Gesellschaft der Wissenschaften zu Göttingen. Abhandlungen der Mathematisch Physikalischen Klasse 1901: 1–232.
- Ehlers E (1901b) Die Anneliden der Sammlung Plate. Fauna Chilensis; Abhandlungen zur Kenntniss der Zoologie Chiles nach den Sammlungen von Dr. L. Plate. Zweiter Band. Zoologische Jahrbuch Supplement 5: 251–272.
- Essenberg C (1918) The factors controlling the distribution of the Polynoidae of the Pacific coast of North America. University of California Publications in Zoology 118: 171–238.
- Fauchald K (1977) Polychaetes from intertidal areas in Panama with a review of previous shallow-water records. Smithsonian Contributions to Zoology 221: 1–81. doi: 10.5479/si.00810282.221
- Fauchald K, Granadas-Barba A, Solís-Weiss V (2009) Polychaeta (Annelida) of the Gulf of Mexico. In: Felder DL, Camp SK (Eds) Gulf of Mexico origins, waters, and biota. Biodiversity. Texas A and M Press, College Station, Texas, 751–788.
- Fauchald K, Reimer AA (1975) Clave de poliquetos panameños con la inclusion de una clave para todas las familias del mundo. Boletín del Instituto Oceanográfico Universidad de Oriente Cumana 14: 71–94.
- Fauvel P (1911) Annélides polychètes du Golfe Persique recueillis par M. M. Bogoyawlewsky. Archives de Zoologie Expérimentale et Générale 5(6): 353–439.
- Fauvel P (1918) Annélides polychètes des côtes d'Arabie récoltées par M. Ch. Pérez. Bulletin du Muséum d'Histoire Naturelle 24(5): 329–344.
- Fauvel P (1919a) Annélides polychètes de Madagascar, de Djibouti et du Golfe Persique. Archives de Zoologie Expérimentale et Générale 58(347): 315–473.
- Fauvel P (1919b) Annélides polychètes de la Guyane Française. Bulletin du Muséum d'Histoire Naturelle de Paris 25: 472–479.
- Fauvel P (1927) Rapport sur les annélides polychètes errantes. Zoological results of the Cambridge Expedition to the Suez Canal, 1924. Transactions of the Zoological Society of London 22: 411–439. doi: 10.1111/j.1096-3642.1927.tb00203.x
- Fauvel P (1933) Annélides polychètes du Golfe du Pei Tcheu Ly de la collection du Musée Hoangho Pai-ho. Récoltées par le R. P. Leroy, S. J. et le R. P. Licent S. J. Publications du Musée Hoangho Paiho de TienTsin 15: 1–67.
- Fauvel P (1950) Contribution à la faune des annélides polychaetes du Senegal. Bulletin de l'Institut Française d'Afrique Noire 12(2): 335–394.
- Fauvel P (1953) Annelida Polychaeta. In: Seymour-Sewell RB (Ed.) The fauna of British India including Pakistan, Ceylon, Burma and Malaya. Indian, Allahabad, 480–507.
- Fauvel P (1955) Résultats scientifiques des campagnes de la “Calypso”. I. Campagne en Mer Rouge (1951–1952). Annales de l'Institut Océanographique Paris 30: 100–120.
- Fauvel P, Rullier F (1957) Nouvelle contribution à la faune des annélides polychètes du Sénégal. Bulletin de l'Institut Française d'Afrique Noire, tome 14, série A, 1: 24–96.
- Fauvel P, Rullier F (1959a) Annélides polychètes. Résultats scientifiques des campagnes de la “Calypso” 4, 10. Campagne 1956 dans le Golfe de Guinée et aux îles Principe, São Tomé et Annobon. Annales de l'Institut Océanographique de Monaco Nouvelle Series 37: 143–205.

- Fauvel P, Rullier F (1959b) Contribution à la faune des annélides polychètes du Sénégal et de Mauretanie. Première Partie. Bulletin de l'Institut Française d'Afrique Noire 21: 477–533.
- Ferguson FF, Jones ER Jr. (1949) A survey of the shore-line fauna of the Norfolk Peninsula. American Midland Naturalist 41: 436–446.
- Forbes ML (1966) Life cycle of *Ostrea permollis* and its relationship to the host sponge, *Stelletta grubii*. Bulletin of Marine Science 16: 273–301.
- Fotheringham N (1976) Population consequences of shell size utilization by hermit crabs. Ecology 57: 570–578. doi: 10.2307/1936441
- Galil BS (2006) The marine caravan—The Suez Canal and the Erythrean invasion. Monographiae Biologicae, 83: 207–300. doi: 10.1007/978-1-4020-5047-3\_6
- Galil BS (2007) Seeing red: Alien species along the Mediterranean coast of Israel. Aquatic Invasions 2: 281–312. doi: 10.3391/ai.2007.2.4.2
- Gambi MC, Castellia, Guizzardi M (1997) Polychaete populations of the shallow soft bottoms off Terra Nova Bay (Ross Sea, Antarctica): distribution, diversity and biomass. Polar Biology 17: 199–210. doi: 10.1007/s003000050123
- Gardiner SL (1976) Errant polychaete annelids from North Carolina. Journal of the Elisha Mitchell Scientific Society 91: 77–220.
- Gil JJ, Lee JH, Tae NY (1987) Taxonomic study of polynoid polychaetes in Korea II. Subfamily Lepidonotinae. Korea Fisheries Association 20: 1–15.
- Gobin JF (2010) Free-living marine polychaetes (Annelida) inhabiting hard-bottom substrates in Trinidad and Tobago, West Indies. Revista de Biología Tropical 58: 147–157.
- Golombek A, Tobergte S, Nesidal MP, Purschke G, Struck TH (2013) Mitochondrial genomes to the rescue—Diurodrilidae in the myzostomid trap. Molecular Phylogenetic and Evolution 68: 312–326. doi: 10.1016/j.ympev.2013.03.026
- Gravier C (1902) Contribution à l'étude des annélides polychètes de la Mer Rouge. Nouvelles Archives du Museum d'Histoire Naturelle de Paris Series 4 3: 147–268.
- Grube AE (1856) Annulata Örstediana. Enumeratio Annulatorum, quae in itinere per Indian occidentalem et Americam centrales annis 1845–1848 suscepto legit cl. A. S. Örsted, adjectis speciebus nonnullis a cl. Kröyero in itinere ad Americam meridionalem collectis. Videnskabelige Meddelelser fra Dansk Naturhistorisk Foreningen i København 1: 44–62.
- Grube AE (1876) Bemerkungen über die Familie der Aphroditeen (Gruppe Polynoina, Acoëtea, Polylepidea). Jahresbericht der Schlesische Gesellschaft für Vaterlandische Kultur Breslau 53: 46–72.
- Grube AE (1878) Annulata Semperiana. Beiträge zur Kenntnis der Anneliden-fauna der Philippinen nach den von Herrn Prof. Semper mitgebrachten Sammlungen. Mémoires de l'Académie Imperiale de Saint Petersburg Series 7 25: 1–300.
- Grube E (1869) Beschreibungen neuer oder weniger bekannter von Hrn. Ehrenberg gesammelter Anneliden des rothen Meeres. Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin aus dem Jahre 1869: 484–521. [imprinted year 1870, but published in 1869 acc. to The Zoological Record 1870 (vol. 6) for the year 1869]
- Hanley JR (1992) Checklist of scaleworms (Polychaeta: Polynoidae) from Hong Kong. In: Morton B (Ed.) The marine flora and fauna of Hong Kong and southern China III. Volume 1. Proceedings of the Fourth International Marine Biological Workshop: The marine

- flora and fauna of Hong Kong and southern China, Hong Kong, 11–29 April 1989. Hong Kong University Press, Hong Kong, 361–369.
- Hanley JR, Burke M (1991) Polychaeta Polynoidae: Scaleworms of the Chesterfield Island and Fairways Reefs, Coral Sea. *Mémoires du Muséum National d'Histoire Naturelle Series A* 151: 9–82.
- Hartman O (1939) Polychaetous annelids, Part 1. Aphroditidae to Pisionidae. Reports of the Allan Hancock Pacific Expedition 7: 1–156.
- Hartman O (1942) A review of the types of polychaetous annelids at the Peabody Museum of Natural History, Yale University. *Bulletin of the Bingham Oceanographic Collection* 8(1): 1–98.
- Hartman O (1944) Polychaetous annelids from California including the description of two new genera and nine new species. *Allan Hancock Pacific Expedition* 10(2): 239–310.
- Hartman O (1945) The marine annelids of North Carolina. *Bulletin of the Duke University Marine Station* 2: 1–54.
- Hartman O (1948) The polychaetous annelids of Alaska. *Pacific Science* 2(1): 3–58.
- Hartman O (1951) The littoral marine annelids of the Gulf of Mexico. *Publications of the Institute of Marine Science Port Aransas Texas* 2: 7–124.
- Hartman O (1954) Polychaetous annelids of the Gulf of Mexico. In: GALFSOFT PS (Ed.) *Gulf of Mexico, its origin, waters and marine life*. Fishery Bulletin Fish and Wildlife Service United States Department of Interior 55: 413–417.
- Hartman O (1959) Catalogue of the polychaetous annelids of the world. Parts 1 and 2. *Occasional Papers of the Allan Hancock Foundation* 23: 1–628.
- Hartman O (1965) Deep-water benthic polychaetous annelids off New England to Bermuda and other North Atlantic areas. *Occasional Papers of the Allan Hancock Foundation* 28: 1–378.
- Hartman O (1974) Polychaetous annelids of the Indian Ocean including an account of species collected by members of the International Indian Ocean Expeditions, 1963–'64 and a catalogue and bibliography of the species from India. *Journal of the Marine Biological Association of India* 16(1): 191–252.
- Hartman O, Reish DJ (1950) The marine annelids of Oregon. *Monographs Series of the Oregon State College Studies in Zoology* 6: 1–64.
- Hartmann-Schröder G (1962) Zur Beitrag zur polychaeten Fauna von Peru. *Kieler Meeresforschungen* 18: 109–147.
- Hartmann-Schröder G, Hartmann G (1991) Zur Kenntnis des Eulitorals der australischen Küsten unter besonderer Berücksichtigung der Polychaeten und Ostracoden. Teil 16. Die Polychaeten der subtropisch-tropischen bis tropischen Ostküste Australiens zwischen Maclean (New South Wales) und Gladstone (Queensland) sowie von Heron Island (Großes Barriere Riff). *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut* 88: 17–71.
- Hartwich G (1993) Die Polychaeten-Typen des Zoologischen Museums in Berlin. The types of Polychaeta in the Zoological Museum, Berlin. *Mitteilungen aus dem Zoologischen Museum in Berlin* 69(1): 73–154. doi: 10.1002/mmnz.19930690106
- Hedgpeth JW (1950) Annotated list of certain marine invertebrates found on Texas jetties. In: Whitten HL, Rosene HF, Hedgpeth JW (Eds) *The invertebrate fauna of Texas coast jetties*,

- a preliminary survey. Publication of the Institute of Marine Sciences University of Texas 1: 72–86.
- Heilprin A (1888) The animal life of our sea-shore. With special reference to the New Jersey coast and southern shore of Long Island. Lippincott, Philadelphia, 130 pp. doi: 10.5962/bhl.title.11680
- Hernández-Alcántara P, Frontana-Uribe SC, Solís-Weiss V (2003) Commented checklist of the polychaetes (Annelida: Polychaeta) from areas adjacent to Islands of the Mexican Pacific and Gulf of California. Bulletin of the Southern California Academy of Sciences 102: 1–16.
- Hoagland RA (1919) Polychaetous annelids from Porto Rico, the Florida Keys, and Bermuda. Bulletin of the American Museum of Natural History 41: 571–591.
- Hong PN, San HT (1993) Mangroves of Vietnam. Volume 7. International Union for Conservation of Nature and Natural Resources, Bangkok, Thailand, 173 pp.
- Ibarzábal DR (1986) Lista de especies de poliquetos bentónicos cubanos. Reporte de Investigación del Instituto de Oceanología, Academia de Ciencias de Cuba 45: 1–17.
- Imajima M (1997) Polychaetous annelids from Sagami Bay and Sagami Sea collected by the emperor Showa of Japan and deposited at the Showa Memorial Institute, National Science Museum, Tokyo. Families Polynoidae and Acoetidae. National Science Museum Monographs 13: 1–131.
- Imajima M, Hartman O (1964) The polychaetous annelids of Japan, Part I. Occasional Papers of the Allan Hancock Foundation 26: 1–237.
- Intès A, Le Loeuff P (1975) Les annélides polychètes de Côte d’Ivoire. I. Polychètes errantes—compte rendu systématique. Cahiers de l’Office de Recherches Scientifiques et Techniques de Outre Mer Serie Oceanographie 13: 267–321.
- Ismail NS (1985) The effects of hydraulic dredging to control oyster drills on benthic macrofauna of oyster grounds in Delaware Bay, New Jersey. Internationale Revue der Gesamte Hydrobiologie 70: 379–395. doi: 10.1002/iroh.19850700308
- Izuka A (1912) The errantiate Polychaeta of Japan. Journal of the College of Science, Imperial University of Tokyo 30(2): 1–262.
- Kalk M (1958) The fauna of the intertidal rocks at Ithaca Island, Delagoa Bay. Annals of the Natal Museum 14: 189–242.
- Kato T, Sato M, Tai A (2006) Polychaetes of the intertidal zone of Yamaguchi Prefecture, Kaminoseki Town, Nagashima (follow-up). Reports of the Chugoku-Shikoku Branch of the Ecological Society of Japan 60: 28–32.
- Katsanevakis S, Bogucarskis K, Gatto F, Vandekerkhove J, Deriu I, Cardoso AS (2012) Building the European Alien Species Information Network (EASIN): a novel approach for the exploration of distributed alien species data. BioInvasions Records 1: 235–245. doi: 10.3391/bir.2012.1.4.01
- Kazmi QB, Naushaba R (2013) Checklist of marine worms reported from Pakistani marine waters. Pakistan Journal of Nematology 31: 187–280.
- Khan SA, Murugesan P (2005) Polychaete diversity in Indian estuaries. Indian Journal of Marine Science 34: 114–119.
- Kinner P, Maurer D (1978) Polychaetous annelids of the Delaware Bay region. Bulletin Fish and Wildlife Service United States Department of Interior 76: 209–224.

- Kinberg JGH (1856) Nya sl gten och arter af Annelider.  fversigt af Kongliga Vetenskaps-Akademiens F rhandlingar Stockholm 12(9–10): 381–388.
- Kinberg JGH (1858) Annulater, Part 3. Annulater. Kongliga svenska fregatten Eugenies resa omkring jorden under bef l af C.A. Virgin  ren 1851–1853. Ventenskapliga Iaktt gelser pa Konung Oscar den F rstes Bef llning Utgifna af Kongliga Svenska Vetenskaps-Akademien. Zoologi 2: 9–32.
- Kirkegaard JB (1983) The Polychaeta of West Africa: Part II. Errant species: 1. Aphroditidae to Nereididae. Atlantide Reports 13: 181–240.
- K lliker A (1872) Beitr ge zur Kenntniss der Polypen, 1.  ber die Gattung *Solanderia* Duch. et Michelin. Verhandlungen des Physisch-Medizins Gesellschaft im W rzburg 2: 11–30.
- Kumar RS (2000) A checklist of soil-dwelling polychaetous annelids from some Indian mangrove habitats. Zoo's Print Journal 10: 439–441.
- Laverde-Castillo JJA (1986) Lista anotada de los poliquetos (Annelida) registrados para el Pacifico Colombiano, con notas preliminares sobre su zoogeografia. Actualidades Biol gicas 15(58): 123–130.
- Leach WE (1816) Vermes Polychaeta. Encyclopedia Britannica, Supplement 6: 451–452.
- Linnaeus C (1758) Systema Naturae per Regna tria Naturae, secundum Classes, Ordines, Genera, Species, cum characteribus, differentiis, synonymis, locis. Tomus 1. Editio reformata. Laurentii Salvii, Holmiae, 824 pp.
- Li HX, Yan Y, He WH, Zou XL (2010) An ecological study on fouling in the waters off the Bailong Peninsula in the Beibu Gulf. Journal of Tropical Oceanography 29: 108–113. [In Chinese]
- Li Y, Ping SR (2008) Huanghai annelid diversity preliminary study. Marine Science 32: 40–51. [In Chinese]
- Macnae W, Kalk M (1958) A natural history of Inhaca Island, Mozambique. First Edition. Witwatersrand University Press, Cape Town, 113 pp.
- MacPhee GK (1978) Synopsis of biological data for the winter flounder, *Pseudopleuronectes americanus* (Walbaum). National Oceanographic and Atmospheric Administration Technical Report National Marine Fisheries Service Circulars 414: 1–43.
- Martin D, Britayev TA (1998) Symbiotic polychaetes: review of known species. Annual Review of Oceanography and Marine Biology 36: 217–340.
- McDermott JJ (2001) Symbionts of the hermit crab *Pagurus longicarpus* Say, 1817 (Decapoda: Anomura): New observations from New Jersey waters and a review of all known relationships. Proceedings of the Biological Society of Washington 114: 624–639.
- Misra A (1995) Hugli Matla estuary: West Bengal. Zoological Survey of India, Calcutta, 93 pp.
- Misra A, Chakraborty RK (2000) Annelida: Polychaeta. Fauna of Gujarat: Invertebrates, Volume 2. Zoological Survey of India, Calcutta, 219 pp.
- Mohammad MBM (1971) Intertidal polychaetes from Kuwait Arabian Gulf, with descriptions of three new species. Journal of Zoology London 163: 285–303. doi: 10.1111/j.1469-7998.1971.tb04536.x
- Monro CCA (1928) Polychaeta of the families Polynoidae and Acoetidae from the vicinity of the Panama Canal, collected by Dr. C. Crossland and Th. Mortensen. Journal of the Linnean Society of London 36: 553–576. doi: 10.1111/j.1096-3642.1928.tb02209.x

- Monro CCA (1934) On a collection of Polychaeta from the coast of China. *Annals and Magazine of Natural History Series* 1013: 353–380. doi: 10.1080/00222933408654824
- Montagu G (1808) Description of several marine animals found on the south coast of Devonshire. *Transactions of the Linnean Society of London* 9: 81–114. doi: 10.1111/j.1096-3642.1818.tb00327.x
- Moore JP (1903) Polychaeta from the coastal slope of Japan and from Kamchatka and Bering Sea. *Proceedings of the Academy of Natural Sciences of Philadelphia* 55: 401–490.
- Moore JP (1906) Additional new species of Polychaeta from the north Pacific. *Proceedings of the Academy of Natural Sciences of Philadelphia* 58: 217–260.
- Moore JP (1908) Some Polychaetous Annelids of northern Pacific coast of America. *Proceedings of the Academy of Natural Sciences of Philadelphia* 60(2): 321–364.
- Moore JP (1910) The Polychaetous annelids dredged by the U.U.S. “Albatross” off the coast of southern California in 1904, II. Polynoidae, Aphroditidae and Sigalionidae. *Proceedings of the Academy of Natural Sciences of Philadelphia* 62: 328–402.
- Morgado EH, Amaral ACZ (1981) Anelídeos poliquetos associados a um briozoário 3. Polynoidae. *Boletim do Instituto Oceanográfico de São Paulo* 30: 91–96. doi: 10.1590/S0373-55241981000100012
- Morgado EH, Tanaka MO (2001) The macrofauna associated with the bryozoan *Schizoporella errata* (Waters) in southeastern Brazil. *Scientia Marina* 65: 173–181.
- Mustaquim J (1997) Marine worms (Polychaeta) of Pakistan. In: Mufti SA, Wood CA, Hasan SA (Eds) *Biodiversity of Pakistan*. Florida Museum of Natural History, Gainesville, 221–227.
- Naeni AB, Rahimian HH (2009) Intertidal scale worms (Polychaeta, Polynoidae and Sigalionidae) from the northern coasts of the Persian Gulf and Gulf of Oman. *Zookeys Special Issue* 31: 53–71. doi: 10.3897/zookeys.31.127
- Nonato EF, Luna JAC (1970a) Sobre alguns poliquetas de escama do Nordeste do Brasil. *Boletim do Instituto Oceanográfico de São Paulo* 18: 63–91. doi: 10.1590/S0373-55241969000100008
- Nonato EF, Luna JAC (1970b) Anelídeos poliquetos do nordeste do Brasil. I. Poliquetos bentônicos da costa de Alagoas e Sergipe. *Boletim do Instituto Oceanográfico de São Paulo* 19: 57–130.
- Okuda S (1940) Polychaetous annelids of the Ryukyu Islands. *Bulletin of the Biogeographical Society of Japan* 10: 1–24.
- Paiva PC (2006) Filo Annelida, Classe Polychaeta. In: Lavrado HP, Ignácio BL (Eds) *Biodiversidade bentônica da região central da zona econômica exclusiva Brasileira. Série Livros, 18*. Museu Nacional, Rio de Janeiro, 261–298.
- Palpal-Latoc VS (1990) New records of polychaetous annelids from Llocos Sur. *National Museum Papers* 1: 45–69.
- Palpal-Latoc VS (1994) Some scale-bearing polychaetes of Llocos Sur. *National Museum Papers* 4: 67–77.
- Pearse AS, Williams LG (1951) The biota of the reefs off the Carolinas. *Journal of the Elisha Mitchell Scientific Society* 67: 133–161.
- Pequegnat WE (1964) The epifauna of a California siltstone reef. *Ecology* 45: 272–283. doi: 10.2307/1933840

- Perkins TH (1998) Checklist of shallow-water marine polychaetous Annelida of Florida. In: Camp DK, Lyons WG, Perkins TH (Eds) Checklists of selected shallow-water marine invertebrates of Florida. Technical Reports, 3. Florida Department of Environmental Protection, Florida Marine Research Institute, Saint Petersburg, 79–122.
- Perkins TH, Savage T (1975) A bibliography of polychaetous annelids of Florida, the Gulf of Mexico and the Caribbean region. Florida Marine Research Publications 14: 1–62.
- Pettibone MH (1953) Some scalebearing polychaetes of Puget Sound and adjacent waters. University of Washington, Seattle, 89 pp.
- Pettibone MH (1963) Marine Polychaete worms of the New England Region, part 1. Aphroditidae through Trochochaetidae. Bulletin of the United States National Museum 227: 1–336. doi: 10.5479/si.03629236.227.1
- Peyrot-Clausade M (1974) Ecological study of coral reef cryptobiotic communities: an analysis of the polychaete cryptofauna. In: Cameron AM, Campbell BM, Cribb AB, Endean R, Jell JS, Jones OA, Mather, Talbot FH (Eds) Proceedings of the Second International Coral Reef Symposium Volume 1. Great Barrier Reef Committee, Brisbane, Australia, 269–283.
- Pillai NGK (2001) On some polychaetes from Cochin estuary. Journal of the Marine Biological Association of the India 43: 120–135.
- Piquet AMT, Bolthuis H, Meredith MP, Buma AGJ (2011) Shifts in coastal Antarctic marine microbial communities during and after melt water-related surface stratification. Federation of European Microbiological Societies Microbiology and Ecology 76: 413–427. doi: 10.1111/j.1574-6941.2011.01062.x
- Pleijel F (2007) Polychaetes of New Caledonia. In: Payri CE, Richer de Forges B (Eds) Compendium of marine species of New Caledonia. Documentation Scientifique et Technique du Centre Institut Recherche et Documentation Nouméa, Papeete, New Caledonia, 175–181.
- Pollock LW (1998) A practical guide to the marine animals of northeastern North America. Rutgers University, New Brunswick, New Jersey, 367 pp.
- Posey MH, Alphin TD, Banner D, Vose F, Lindberg W (1998) Temporal variability, diversity and guild structure of a benthic community in the northeastern Gulf of Mexico. Bulletin of Marine Science 63: 143–155.
- Pratt HS (1923) A manual of the common invertebrate animals exclusive of insects. McClurg, Chicago, 737 pp.
- Pratt HS (1951) A manual of the common invertebrate animals, revised edition. McClurg, Chicago, 854 pp.
- Quatrefages A (1866) Histoire naturelle des annélids marins et d'eau douce. Annélides et géphyriens. Volumes 1-2 (Part 1). Librairie Encyclopédique de Roret, Paris, 794 pp.
- Rajasekaran R, Fernando OL (2012) Polychaetes of Andaman and Nicobar Islands. In: Venkataraman K (Ed.) Ecology of faunal communities on the Andaman and Nicobar Islands. Springer, Berlin, 1–22. doi: 10.1007/978-3-642-28335-2\_1
- Rasheed S, Mustaqim J (2003) Scale bearing worms (Annelida: Polychaeta) of the family Polynoidae from the coastal waters of Pakistan. Pakistan Journal of Marine Sciences 12: 49–82.
- Read G, Fauchald K (2015) World Polychaeta database. World Register of Marine Species. <http://www.marinespecies.org/aphia.php?p=taxdetails&id=129496>

- Reimer AA (1976) Succession of invertebrates in vacant tests of *Tetracelasma stalactifera panamensis*. *Marine Biology* 35: 239–251. doi: 10.1007/BF00396872
- Reish DJ (1968) A biological survey of Bahia de Los Angeles, Gulf of California, Mexico. II. Benthic polychaetous annelids. *Transactions of the San Diego Society of Natural History* 15: 67–106.
- Renaud JC (1956) A report on some polychaetous annelids from the Miami-Bimini Area. *American Museum Novitates* 1812: 1–40.
- Rioja E (1941) Estudios anelidológicos. III. Datos para el conocimiento de la fauna de poliquetos de las costas del Pacífico de México. *Anales del Instituto de Biología de México* 12: 669–746.
- Rioja E (1947) Estudios anelidológicos XVII. Contribución al conocimiento de los anélidos poliquetos de Baja California y Mar de Cortes. *Anales del Instituto de Biología de México* 18: 197–224.
- Rioja E (1958) Estudios anelidológicos XXII. Datos para el conocimiento de la fauna de anélidos poliquetos de las costas orientales de México. *Anales del Instituto de Biología de México* 29: 219–301.
- Rioja E (1962) Estudios anelidológicos XXVI. Algunos anélidos poliquetos de las costas del Pacífico de México. *Anales del Instituto de Biología de México* 33: 131–229.
- Rivera CG (2008) Checklist of polychaetes (Annelida: Polychaeta) from El Salvador, eastern Pacific. *Check List* 4: 18–30. doi: 10.15560/4.1.18
- Rizzo AE, Steiner TM, Pardo EV, Nogueira JMM, Fukuda MV, Santos CSG, Amaral ACZ (2011) Polychaeta. In: Amaral ACZ, Nallin SAH (Eds) *Biodiversidades e ecossistemas bentônicos marinhos do litoral norte de São Paulo, sudeste do Brasil*. Universidade Estadual de Campinas, Campinas, São Paulo, 126–146.
- Rodríguez-Gómez H (1979) Poliquetos de aguas someras coletados en las Islas del Rosario. *Instituto de Anales del Instituto de Investigaciones Marinas Punta de Betín* 11: 347–367.
- Rodríguez-Gómez H (1988) Contribución al conocimiento de los Anélidos (Annelida: Polychaeta) de aguas someras en la Bahía de Nenguange Parque Nacional Natural Tayrona, Colombia. *Trianea* 2: 403–443.
- Romero L, Paredes C, Chavez R (1988) Estrutura de la macrofauna asociada a los rizoides de *Lessonia* sp. (Laminariales, Phaeophyta). *Boletín del Instituto de Mar del Perú* Volume Extra 1: 133–139.
- Ruff RE (1995) Family Polynoidae Malmgren, 1867. In: Blake JA, Hilbig B, Scott PH (Eds) *Taxonomic atlas of the benthic fauna of the Santa Maria Basin and western Santa Barbara Channel. Volume 5—the Annelida Part 2-Polychaeta: Phyllodocida (Syllidae and scale-bearing families), Amphinomida, and Eunicida*. Santa Barbara Museum of Natural History, Santa Barbara, California, 105–166.
- Rullier F (1974) Quelques annélides polychètes de Cuba recueillies dans les éponges. *Travaux du Museum d'Histoire Naturelle "Grigore Antipa"* 14: 9–77.
- Rullier F, Amoureux L (1979) Campagne de la Calypso au large des côtes atlantiques de l'Amérique du Sud (1961–1962). I. 33. Annélides polychètes. *Annales de l'Institut Océanographique Supplement* 55: 145–206.

- Sagasti A, Schaffner LC, Duffy JE (2000) Epifaunal communities thrive in an estuary with hypoxic episodes. *Estuaries* 23: 474–487. doi: 10.2307/1353140
- Salazar-Silva P (2006) Scaleworms (Polychaeta: Polynoidae) from the Mexican Pacific and some other Eastern Pacific sites. *Investigaciones Marinas de Valparaíso* 34(2): 143–161. doi: 10.4067/s0717-71782006000200014
- Salazar-Vallejo SI (1996) Lista de especies y bibliografía de poliquetos (Polychaeta) del Gran Caribe. *Anales del Instituto de Biología Universidad Nacional Autónoma de México Série Zoología* 67: 1–50.
- Salazar-Vallejo SI, Eibye-Jacobsen D (2012) Annulata Orstediana: Publication dates, composition and annotated taxonomic list, with some comments on *Hemipodus* (Polychaeta: Glyceridae). *Revista de Biología Tropical* 60: 1391–1402. doi: 10.15517/rbt.v60i3.1815
- Salazar-Vallejo SI, Londoño-Mesa MH (2004) Lista de especies y bibliografía de poliquetos (Polychaeta) del Pacífico Oriental Tropical. *Anales del Instituto de Biología Universidad Nacional Autónoma de México Série Zoología* 75: 9–97.
- San Martín G, Aguirre O, Baratech L (1986) Anélidos poliquetos procedentes de la I Expedición Cubana-Española a la Isla de la Juventud y Archipiélago de los Canarreos. I. Familias Polynoidae, Sigalionidae, Pholoidae y Pisionidae. *Revista de Investigaciones Marinas* 7: 3–16.
- Santhakumari V (1973) A brief account of the commensals, associates and predators of the marine wood boring animals. *Mahasagar* 6: 178–181.
- Sarma ALN (1974) The phytal fauna of *Ulva fasciata* off Visakhapatnam Coast. *Proceedings of the Indian Academy of Sciences Section B* 80: 147–161.
- Sato M (2001) Crustaceans and polychaetes collected at the proposed site for the nuclear power plant in Nagasima, Kaminoseki-cho, Yamaguchi Prefecture. In: Ankei Y (Ed.) [The biodiversity of Nagashima Island, Setouchi Inland Sea, Japan.] Reports of the Chugoku-Shikoku Branch of the Ecological Society of Japan//Ecological Society of Japan-China Shikoku District Bulletin 59: 11–13. [In Japanese]
- Seidler HJ (1923) Beiträge zur Kenntnis der Polynoiden I. *Archiv für Naturgeschichte* 89 (Abt. A/11): 1–217.
- Seidler HJ (1924) Beiträge zur Kenntnis der Polynoiden I. *Archiv für Naturgeschichte* A 89: 1–217.
- Shin PKS (1982) Some polychaetous annelids from Hong Kong waters. In: Morton B, Tseng CK (Eds) *Proceedings of the First International Marine Biological Workshop: the marine flora and fauna of Hong Kong and southern China*, Hong Kong, 1980. Hong Kong University, Hong Kong, 161–172.
- Shin PKS (1998) Biodiversity of subtidal benthic polychaetes in Hong Kong coastal waters. In: Morton B (Ed.) *The marine biology of the South China Sea. Proceedings of the Third International Conference on the Marine Biology of the South China Sea*. Hong Kong University, Hong Kong, 57–74.
- Shin PKS (2000) The detection of ecological stress in a sub-tropical macrobenthic community in Hong Kong. *Asian Marine Biology* 17: 149–160.
- Smith RI (1964) Keys to marine invertebrates of the Woods Hole Region. Annelida. *Contribution of the Systematics Ecology Program Marine Biological Laboratory Woods Hole* 11: 47–83.

- Solis-Weiss V, Bertrand Y, Helleouet MN, Pleijel F (2004) Types of Polychaetous annelids at the Museum National d'Histoire Naturelle, Paris. *Zoosystema* 26: 377–384.
- Soota TD, Misra A, Chakraborty RK (1980) Polychaete fauna of Andaman and Nicobar Islands. *Records of the Zoological Survey of India* 77: 55–69.
- Soota TD, Misra A, Chakraborty RK (1981) Polychaete fauna of Gujarat coast. *Records of the Zoological Survey of India* 79: 93–104.
- Srikrishnadhas B, Ramamoorthi K, Balasubrahmanyam K (1987) Polychaetes of Porto Novo waters. *Journal of the Marine Biological Association of India* 29: 134–139.
- Stainken DM (1984) Organic pollution and the macrobenthos of Raritan Bay. *Environmental Toxicology and Chemistry* 3: 95–111. doi: 10.1002/etc.5620030112
- Steimle FW Jr., Caracciolo-Ward J (1989) A reassessment of the status of the benthic macrofauna of the Raritan estuary. *Estuaries* 12: 145–156. doi: 10.2307/1351819
- Steinbeck J, Ricketts EF (1941) *The Sea of Cortez. A leisurely journal of travel and research. With a scientific appendix comprising materials for a source book on the marine animals of the Panamic faunal Province.* Viking, New York, 598 pp.
- Stimpson W (1860) Notes on North American Crustacea, in the Museum of the Smithsonian Institution, No. II. *Annals of the Lyceum of Natural History of New York* 7: 177–246.
- Struck TH, Halanych KM (2010) Origins of holopelagic Typhloscolecidae and Lopadorhynchidae within Phyllodocidae (Phyllodocida, Annelida). *Zoologica Scripta* 39: 269–275. doi: 10.1111/j.1463-6409.2010.00418.x
- Struck TH, Nesnidal MP, Purschke G, Halanych KM (2008) Detecting possibly saturated positions in 18s and 28s sequences and their influence on phylogenetic reconstruction of Annelida (Lophotrochozoa). *Molecular Phylogenetic and Evolution* 48: 628–645. doi: 10.1016/j.ympev.2008.05.015
- Sukumaran S, Devi KS (2009) Polychaete diversity and its relevance in the rapid environmental assessment of Mumbai Port. *Current Science* 97: 1439–1444.
- Summer F, Osburn RC, Cole LJ (1913) Annulata. A Biological survey of the waters of the Woods Hole and vicinity Part 2. *Bulletin of the United States Bureau of Fisheries* 31: 615–636.
- Tagatz ME, Ivey JM, Dalbo CE, Oglesby JL (1982) Responses of developing estuarine macrobenthic communities of drilling muds. *Estuaries* 5: 131–137. doi: 10.2307/1352110
- Tampi PRS, Rangarajan K (1964) Some polychaetous annelids from the Andaman waters. *Journal of the Marine Biological Association of India* 6: 98–123.
- Tebble N (1955) The polychaete fauna of the Gold Coast. *Bulletin of the British Museum (Natural History) Zoology* 3: 61–148.
- Tebble N, Chambers S (1982) Polychaetes from Scottish waters. A guide to identification, part 1. Family Polynoidae. *Royal Scottish Museum Studies*, Edinburgh, 73 pp.
- Treadwell AL (1914) Polychaetous annelids of the Pacific coast in the Collection of the Zoological Museum of the University of California. *University of California Publications in Zoology* 13: 175–234.
- Treadwell AL (1937) The Templeton Croker Expedition. VIII. Polychaetous annelids from the west coast of Lower California, the Gulf of California and Clarion Island. *Zoologica New York* 22: 139–160.

- Treadwell AL (1939a) New polychaetous annelids from New England, Texas and Puerto Rico. *American Museum Novitates* 1023: 1–7.
- Treadwell AL (1939b) Polychaetous annelids of Porto Rico and vicinity. *Scientific Survey of Porto Rico and the Virgin Islands. The New York Academy of Science* 16(2): 151–319.
- Uschakov PV (1982) Fauna of the U. S. S. R., New Series. Polychaeta. Volume II, part 1. Polychaetes of the suborder Aphroditiformia of the Arctic Ocean and the northwestern part of the Pacific Ocean, families Aphroditidae and Polynoidae. Zoological Institute of the USSR, Academy of Sciences, Moscow, 272 pp. [In Russian]
- Van der Heiden AM, Hendrickx ME (1982) Inventario de la fauna marina y costera del sur de Sinaloa, México, Segundo Informe. Universidad Nacional Autónoma de México, Instituto de Ciencias Marinas y Limnología, Sinaloa, 135 pp.
- Von Prahl H, Guhl F, Gröl M (1979) Poliquetos de Gorgona. In: Von Prahl H, Guhl F, Gröl M (Eds) *Gorgona. Futura*, Bogotá, 131–140
- Verrill AE (1873) Report upon the invertebrate animals of Vineyard Sound and the adjacent waters, with an account of the physical characters of the region. *Report of the United States Commission for Fisheries 1871–72*: 295–778.
- Verrill AE (1882) New England Annelida. Part 1. Historical sketch, with annotated list of the species hitherto recorded. *Transactions of the Connecticut Academy of Arts and Sciences* 4: 285–324.
- Verrill AE, Smith SI (1874) Report upon the invertebrate animals of Vineyard Sound and the adjacent waters, with an account of the physical characters of the region. *Report of the United States Commission of Fisheries* 324: 295–852.
- Von Prahl H, Guhl F, Gröl M (1979) Poliquetos de Gorgona. In: Von Prahl H, Guhl F, Gröl M (Eds) *Gorgona. Futura*, Bogotá, 131–140.
- Wang JJ, Huang ZG (1994) Fouling polychaetes of Hong Kong and adjacent waters. *Asian Marine Biology* 10: 1–12.
- Warren W (1942) A survey of the annelid worms of the Grand Isle region. *Bios Mount Vernon Iowa* 13: 39–46.
- Webster HE (1879) Annelida Chaetopoda of the Virginian coast. *Transactions Albany Institute New York* 9: 202–272.
- Wehe T (2006) Revision of scale worms (Polychaeta: Aphroditoidea) occurring in the seas surrounding the Arabian Peninsula, Part 1. Polynoidae. *Fauna of Arabia* 22: 23–197.
- Wehe T, Fiege D (2002) Annotated checklist of the polychaete species of the seas surrounding the Arabian Peninsula: Red Sea, Gulf of Aden, Arabian Sea, Gulf of Oman, Arabian Gulf. *Fauna of Arabia* 19: 7–238.
- Wells HW (1961) The fauna of oyster beds, with special reference to the salinity factor. *Ecological Monographs* 31: 239–266. doi: 10.2307/1948554
- Wells HW, Gray I (1964) Polychaetous annelids of the Cape Hatteras area. *Journal of the Elisha Mitchell Scientific Society* 80: 70–78.
- Wesenberg-Lund E (1949) Polychaetes of the Iranian Gulf. In: Jessen K, Spärck R (Eds) *Danish scientific investigations in Iran* 4: 247–400.
- Wesenberg-Lund E (1962) Reports of the Lund University Chile Expedition 1948–49. 43. Polychaeta Errantia. *Acta Universitatis Lundensis, Ser. N.F.* 257(12): 1–137.

- Weston D (1984) Family Polynoidae Malmgren, 1867. In: Uebelacker JM, Johnson PG (Eds) Taxonomic guide to the polychaetes of the northern Gulf of Mexico. Volume 3. Mobile, Vittor, Alabama, 21.1–21.30.
- Willey A (1905) Report on the Polychaeta collected by Professor Herdman, at Ceylon, in 1902. Ceylon Pearl Oyster Fisheries Supplementary Reports 30: 243–324.
- Williams JD (2003) The not so lonely lives of hermit crabs: studies on hermit crab symbionts. Hofstra Horizons Fall 4: 15–18.
- Williams JD, McDermott JJ (2004) Hermit crab biocoenoses: a worldwide review of the diversity and natural history of hermit crab associates. *Journal of Experimental Marine Biology and Ecology* 305: 1–128. doi: 10.1016/j.jembe.2004.02.020
- Wood JG (1885) *Animate creation: Popular edition of “Our living world”, a natural history*, Volume 3. Hess, New York, 114 pp. doi: 10.5962/bhl.title.49480
- Wu B, Wu Q, Qiu J, Lu H (1997) *Fauna Sinica: Phylum Annelida, Class Polychaeta, Order Phyllodocimorpha*. Science, Beijing, 329 pp. [In Chinese]
- Wu SK (1968) On some polychaete worms from the northern coast of Taiwan. *Bulletin of the Institute of Zoology Academia Sinica* 7: 27–48.
- Yan SK, Huang ZG (1993) Biofouling of ships in Daya Bay, China. In: Morton B (Ed.) *The marine biology of the South China Sea. Proceedings of the First International Conference on the Marine Biology of Hong Kong and the South China Sea*, Hong Kong, 28 October –3 November 1990. Hong Kong University, Hong Kong, 131–136.
- Yentsch AE, Carriker MR, Parker RH, Zullo VA (1966) *Marine and estuarine environments, organisms and geology of the Cape Cod Region*. Marine Biological Laboratory, Woods Hole, Massachusetts, 178 pp.
- Zenetos A, Çinar ME, Pancucci HA, Papadopoulou MA, Harmelin JG, Furnari G, Andaloro F, Bellou N, Streftaris N, Zibrowius H (2005) Annotated list of marine alien species in the Mediterranean with records of the worst invasive species. *Mediterranean Marine Science* 6: 63–118. doi: 10.12681/mms.186
- Zenetos A, Verlaque M, Gofas S, Çinar ME, Garcia Raso E, Azzuro E, Bilecenoglu M, Froggia C, Siokou I, Bianchi CN, Morri C, Sfriso A, San Martin G, Giangrande A, Katagan T, Ballesteros E, Ramos Espla A, Mastrototaro F, Ocana O, Zingone A, Cantone G, Gambi MC, Streftaris N (2010) Alien species in the Mediterranean MSFD areas by 2010. Part 1. Spatial distribution. *Mediterranean Marine Science* 11: 381–493. doi: 10.12681/mms.87